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5755-32

**THE SCHOOL REVIEW and THE ELEMENTARY SCHOOL JOURNAL**

**Vol. II**

**No. 6**

**October 1920**

**Whole No. 14**

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# HOME ECONOMICS IN AMERICAN SCHOOLS

*By*

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**HAROLD ORDWAY RUGG**



**THE UNIVERSITY OF CHICAGO**  
**CHICAGO, ILLINOIS**

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Published December 1920

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### FRENCH SEAMS

- VII. SPACING
- VIII. CONSTRUCTIVE ELEMENTS
- IX. NEATNESS
- X. TENSION
- XI. LENGTH OF STITCH



## CHAPTER I

### PRESENT STATUS OF HOME ECONOMICS

The purpose of this monograph is to report the findings of a survey of the status of home economics in the public schools of the United States. The survey has included a quantitative study of existing courses in elementary and secondary schools, a minute analysis of the textbooks by which much of the teaching practice is controlled, and a thorough canvass of the literature of the subject in search of definite aims or objectives. In addition, this report sets forth the preliminary organization of tests in measuring skill in machine sewing, content and reasoning tests in textiles and clothing, and a suggestive program for the reconstruction of the curriculum in home economics.

The writers have prefaced the detailed report of their investigations by a brief discussion of the most important findings and corresponding outstanding needs in home economics education.

The most striking facts revealed by the investigations herein reported may be summarized in these five statements: (1) there is little evidence of a continuous sequentially arranged curriculum in the public schools; (2) teaching emphasis is placed on information and technique rather than on powers of thinking and judgment; (3) vague statements of aims and outcomes are prevalent which show the work to be controlled by an interest in subject-matter rather than by educational and psychological motives; (4) there are few tests or scales with which to measure achievement or progress; (5) there is no definite program for curriculum-making.

1. *The curriculum situation.*—A complete lack of sequence of subjects and gradation of material is revealed in the school courses; that is, there is lack of a continuous curriculum. A study of the order of projects utilized in various school grades illustrates concretely these statements. Complicated garments which involve complex knowledge and technique are made by pupils prior to more elementary ones; the same project in sewing is repeated in any one of a number of years. The present practice of introducing sewing from one to two years prior to the grosser skills that can be brought into food courses is also open to criticism. The reader will find in chapter ii a discussion of the

fundamental problems of sequence. Shall the order of subjects have an educational and mental basis or shall technical difficulties of construction and mechanics alone control our decisions?

In discussing these questions concerning the curriculum this report makes use of quantitative procedure. Discussions are based upon careful interpretation of tabulations. These, in turn, rest upon as complete a use of scientific technique as it has been possible to develop in these preliminary stages of the work. Basic assumptions have been made that the textbook largely determines the course of study and that the work of teachers is strongly influenced by the content as it is laid down in various kinds of printed material.

The salient characteristics of the curriculum are shown by a summary, evaluating the contents of the most widely used textbooks. An unusually large number of books—267 different textbooks—was found to be used in the entire field. They include “encyclopedias,” manuals of reference, recipe books, compilations of directions for learning the technique of sewing, books written for the college but used in high schools and elementary schools, and very few books, indeed, designed definitely for the school grades in which they are used. There is thus heterogeneity in organization and content of the curriculum. However, the curriculum is determined by relatively few books. Nine books in food and ten in clothing cover 95 per cent of the practice of our public schools. In brief, these are the points canvassed in detail in chapter iii.

2. *Teaching emphasis in home economics.*—The second finding of the survey, that the teaching emphasis is on information and technique rather than on powers of thinking and judgment, is also based on the assumption that the thought of children and the energies of teachers are expended on those details to which textbooks pay attention. From analyses of textbooks and courses of study, this report presents definite answers to the questions: To what extent does the home economics curriculum provide for worth-while home-making skills? Is the information acquired by the children of social value? Is sufficient opportunity provided for young people to develop powers of critical judgment? Is there promise that instruction will result in real abilities of appreciation and enjoyment? Illustrations are presented which show that our public-school instruction is devoted primarily to two activities: information-giving and the development of technique. Consequently, a minimum of opportunity is provided for training in judgment or thinking. The facts cited cause us to raise serious questions as to whether

or not the information given in our courses is always of social value. For example, the results of quantitative tabulation point to the conclusion that a minimum of training is given to forming standards of judgment with reference to art principles and that sewing dominates the clothing curriculum just as recipes control the teaching of foods.

3. *Current purposes for teaching.*—The third finding is that the mastery of technique and information are the aims set forth by writers and teachers of home economics. The content of our courses is certain to be strongly influenced by the purposes held in mind in framing and teaching it. Just as our textbook material is permeated with an "information-giving" point of view, so our classroom instruction holds this purpose in the foreground. The home economics group should work toward the development of a new point of view respecting the fundamental purposes of teaching their subject. We shall be very critical of those aims which demand that girls be perfected in ability to cook and sew. If training of this sort robs them of opportunity for adequate training in the use of standards concerning the technique of housekeeping, the situation must be condemned in sweeping terms. It is much more vital for them to know how to choose wisely, to buy sanely, to plan and organize, and to learn to "appreciate" and "enjoy" thoroughly than it is to have developed a high degree of skill in performing any of the mechanics of home-making.

4. *Standardized tests and scales in home economics.*—To make home economics scientific one of the most pressing needs is the design and use of standardized tests and scales. By the report of illustrative tests in chapters vii and viii an attempt is made to show how this procedure will aid in the construction of a sound scheme of home economics education. If instruction is to eventuate in important abilities of thinking and enjoyment, it is clear that we can aid the process by the use of definite measuring instruments. Reasoning tests will not only differentiate between pupils of varying abilities, but they will also serve to focus the attention of teachers upon this outcome as the central function of teaching. Similarly, the design of information tests will expedite notably the movement for the standardization of minimum essentials in home economics and will at the same time serve as a very definite guide for the teacher. Furthermore, the design of scales for various kinds of skills—for example, ability in machine sewing—will aid both teacher and pupil.

5. *A program for curriculum-making and teaching procedure.*—Finally, we need for the future to formulate a complete program for

curriculum-making and teaching procedure. This program must be developed from all the other needs shown by the survey. Its first element should be a scheme of principles underlying the selection of subject-matter. Its second should be criteria to control the sequence of subjects within the various school grades. We need, further, a plan to control the emphasis that we place upon various outcomes and purposes in our class instruction, one that will make teachers conscious constantly of the imperative need of so framing class exercises that facts and habit-formation are subordinated to principle and so woven into class presentation as to develop thinking ability. Success in teaching rests primarily upon (1) the degree to which we learn to use a psychological approach to our subject; (2) the extent to which we study the mental life of children; and (3) the extent to which we frame our whole school procedure in accordance with scientific findings. Throughout this entire report, therefore, we shall talk much about "learning." The phrase "how children learn" will dominate our thinking in so far as the discussion affects the teaching phases of the matter.

Another point in our program, therefore, is the formulation of machinery for scientific experimentation in teaching home economics. A platform should be developed from this for the construction of school textbooks. Fundamentally, our program should be built on educational principles so that home economics will be equipped to justify its position on the ground of its intellectual value and social usefulness.



## CHAPTER II

### HOW COURSES IN HOME ECONOMICS ARE ORGANIZED: AN EVALUATION OF SEQUENCE AND EMPHASIS

Public-school home economics means "sewing" and "cooking." Again and again the student of public-school teaching can observe that emphasis is placed, not on the varied, many-sided subject-matter urged by the college teacher of home economics, but upon these technical skills.

In this chapter this fact is brought out by an analysis of actual courses of study, a profitable first step in the investigation of home economics instruction. Several hundred courses of study from city school systems in twenty-two states have been examined; of these, sixty-seven contained enough description of the home economics courses to present a typical picture of the work done in our public schools. These have been analyzed critically and tabulated in detail, and supply for the most part the basis for the statements made in this chapter concerning the scope and organization of home economics courses.

In these sixty-seven courses of study one finds ample justification for the statement that the public schools are teaching home economics as so much sewing and cooking. While in the elementary school there are instances here and there where the sewing courses include some instruction in certain other subjects—in textiles, in costume design, in house furnishing and house planning—these subjects are clearly subordinated to the sewing. The attention of the household-art teacher is devoted primarily to teaching children how to sew.

In the same fashion, the time of the "domestic science" teacher in the elementary school is spent primarily on instruction in cooking. Careful investigation of the courses used in public schools leaves little doubt that those who are engaged in administering the food work in home economics are concerned chiefly with the preparation of food according to recipes. Subordinated to this are other subjects, such as food production and manufacture, nutrition, meal planning, etc. Some slight attention is paid to buying. The all-important aim, however, as public-school instruction is now organized, is the acquisition of information concerning how to prepare food. Cooking instruction is not aimed so definitely at the development of skill in the preparation of food, as

at the giving of information concerning how to prepare food. But more of this technique will be considered later. We are first concerned with the larger questions of organization and administration of courses.

*Sewing precedes cooking in the elementary curriculum.*—This is one of the most important facts of organization observed in the analysis of the courses of study. As questions of the psychological arrangement of subject-matter are introduced, one is led to the conviction that the courses have been introduced with little thought of such problems. Clothing is introduced first in 58 per cent of the schools, and food study first in only 6 per cent. The remaining 36 per cent introduce the study of food and clothing at the same time (Fig. 1).

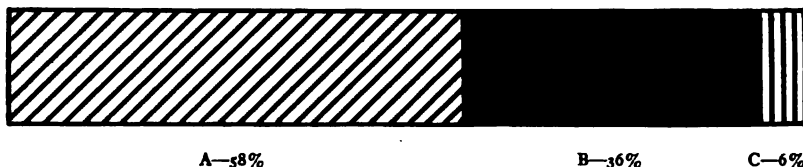


FIG. 1.—Percentage of schools in which (A) clothing courses are introduced prior to food courses, (B) clothing and food courses are introduced at the same time, (C) food courses are introduced prior to clothing courses.

*Distribution of beginning food and clothing courses.*—There is far less uniformity in regard to the grade in which the subject is introduced than to the order in which the courses are begun.

Figure 2 shows the number of schools that introduced beginning clothing courses and beginning food courses in each grade from the fourth to the tenth inclusive. Ten cities began home economics instruction in the fourth grade with courses in sewing, nine in the fifth grade, sixteen in the sixth grade, sixteen in the seventh grade, two in the eighth, and three in the ninth grade. Similarly only two cities introduced food courses as early as the fifth grade, ten as early as the sixth, twenty-five in the seventh, fourteen in the eighth, etc. Figure 2 is also of interest in showing that there is very little agreement as to the proper place to introduce the study of either food or clothing. Clearly there is no uniformity in the general practice of organizing courses within the elementary and secondary schools.

*Amount of time allotted to home economic courses.*—Table I from Professor Koos's report, showing the number of years devoted to home economics in different schools, strikingly confirms this lack of uniform procedure.

There are three distinct modes in the number of years of work which are offered by city systems: 10 schools out of 63 offer 1 year; 19 offer 2 years; 11 offer 4; 5 scattering ones offer from  $4\frac{1}{2}$  to 8. If

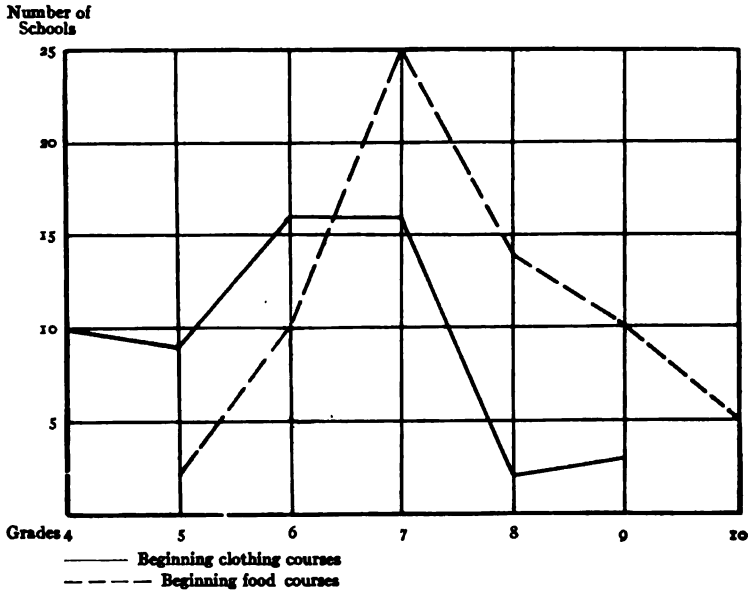


FIG. 2.—Number of schools introducing beginning clothing and food courses in the various grades of 67 school systems.

one can discover a modal procedure, it is that two-year courses are offered more frequently than any other, yet a fairly considerable number of schools are now giving instruction in home economics through four years of school.

TABLE I

EXTENT OF THE OFFERING IN HOME ECONOMICS AND HOUSEHOLD ART IN NUMBER OF YEARS OF WORK REPORTED

Years of Work	Number of Schools
1	10
1½	3
2	19
2½	3
3	6
4	11
4½	1
5	1
6½	1
8	2
Not making usable replies	6
Total number responses to questionnaire	63

It is impossible to tell from Koos's report in which of the grades the work is organized. We assume, however, that most of his references have to do with grades nine to twelve inclusive. From the study of his own questionnaires he comments on the frequency with which city systems present home economics work in combination courses. He says, "These combination courses may be limited to one year, or they may continue through two years, and the practice is followed even in third- and fourth-year courses, as may be seen in the following illustrations: one school offers a course in laundry and dressmaking in the third year; another, a course in millinery, dressmaking, laundry, and dietetics in the fourth year; still another a course in sanitation, home management, and art needlework in the third year."<sup>1</sup> This also illustrates the lack of standardization of courses as well as of terminology.

One of the most important findings, therefore, from the investigation of the city courses of study, is the general practice of introducing sewing or clothing courses while the child is in the earlier grades, with the work in food or cooking following this by at least two years. Certainly this practice is in distinct opposition to what would be expected from a psychological study of the mental processes called into play in the two kinds of courses. The distribution of such courses should recognize basic facts of children's physical and mental development. It appears to be a well-established principle that young children should not be asked to perform manual activities which require a fine muscular co-ordination. It is doubtful whether the pupil's physical development in the early grades is such that these tasks can be performed without strain. In his early years he is best adapted to performing the grosser muscular activities. Hence there is justification for questioning the tendency in home economics to introduce sewing one to two years before cooking. The skill required in cooking is of a grosser type than that required in sewing. Yet nineteen schools require children to devote definite periods in school to sewing in the fourth and fifth grades as contrasted with two schools which require them to cook in the fifth grade.

Furthermore, observation shows that young children are more interested in the cooking class than in the sewing class. The reason is not hard to find. Young children like activities which bring quick returns. The nature of sewing is such, on the one hand, that the child

<sup>1</sup> Koos, L. V., *The Administration of Secondary-School Units*. Supplementary Educational Monographs, Vol. I, No. 3, pp. 127-31. Chicago: University of Chicago Press, 1917.

must wait during many lessons, perhaps throughout the whole term, before she has one completed article. Interest lags and learning is hampered. On the other hand, cooking is of such a nature that immediate returns can be secured.

For these reasons, it is difficult to see why public-school administrators have ordained that sewing courses nearly always precede cooking courses by from one to two years. It would seem logical, when the curriculum permits only one course to be given at a time, that cooking should be given first. No added equipment would be necessary. All that is necessary is to change the order of things. Let the fifth and sixth grades use the cooking equipment and the seventh and eighth grades the sewing equipment. Only four schools out of sixty-seven whose courses were analyzed do not offer cooking. In the other sixty-three schools it should be possible to reverse the order of the beginning courses in cooking and sewing as suggested above. This reverse order, that is, with cooking introduced first, is now prevalent in only 6 per cent of the schools (Fig. 1).

*The introduction of topics within subjects.*—Not only the distribution of the food and clothing courses but also the distribution of various topics or phases of subject-matter within each field needs consideration. For example, there are the problems of teaching hand sewing, machine sewing, textile production, facts about textiles "for consumers," sanitary handling of food, marketing, and such topics. They must be taught in their proper sequence at the period when they are most interesting to the child and at the period when they are best adapted to his abilities. Space in this chapter will not permit a detailed consideration of each phase of subject-matter. A few typical examples, however, may be chosen for discussion, comments being based on the tabulation of the content of these sixty-seven courses of study.

#### EXAMPLES OF CURRENT PRACTICES IN PRESENTING SUBJECT-MATTER

1. *Hand sewing versus machine sewing.*—The question of hand sewing versus machine sewing has long been discussed among home economics teachers. The consensus of opinion is that hand sewing should be emphasized but little, and that machine sewing should receive much attention. Three arguments are offered in support of this recommendation: First, hand sewing requires girls to make a fine muscular co-ordination, which is frequently a real physical strain. Machine sewing does not require so detailed a muscular control. Secondly, hand sewing does not offer as great an opportunity for mental

training as does machine sewing. The argument is advanced that the repetition of the same stitch over and over again, which is necessary in making a garment by hand, does not have the educational value that the construction of two garments or more by the more rapid process of the machine would have. Thirdly, it is very difficult to find definite social value for hand sewing. In these days people do not have the many hours required to make garments by hand. Fewer and fewer garments are being made in the home, and of those which are made in the home, practically all are machine made.

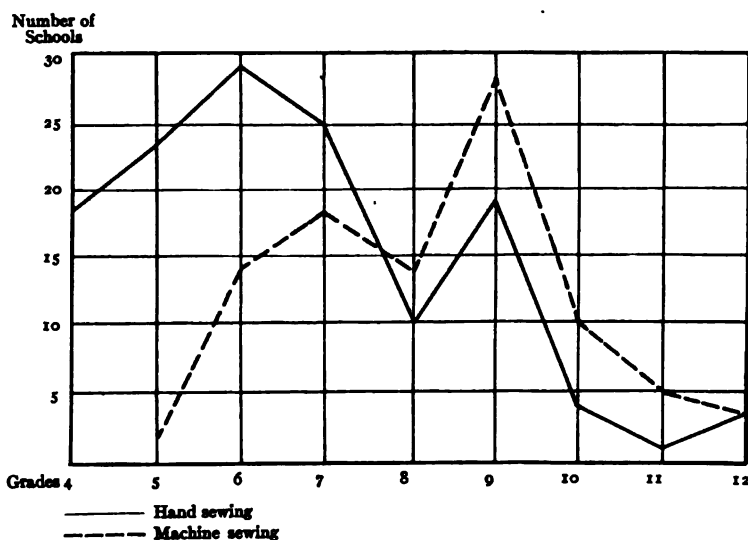


FIG. 3.—Number of schools emphasizing hand sewing and machine sewing in the various grades of 67 school systems.

Yet the practice in the public schools emphasizes hand sewing. Figure 3 shows the grades in which courses in hand sewing and machine sewing are introduced. It will be noted that many more school systems introduce hand sewing in the fourth, fifth, and sixth grades than machine sewing. Only two introduce machine sewing in the fifth grade. This figure is contrasted with fourteen school systems which by the end of the sixth grade have offered instruction in machine sewing. In 14 per cent of the schools the teaching of machine sewing is not mentioned at all. In the high-school years machine sewing is emphasized. It is not contended that no hand sewing should be taught. A minimum of instruction in this subject probably always will be

necessary. Of fundamental concern, however, are the major emphasis and distribution of time throughout the course. If the sixty-seven courses of study which were analyzed may be taken as indicative of the general practice, there is need for an immediate and thorough revision.

2. *The teaching of intelligent buying.*—It doubtless will be agreed generally by home economics teachers that public schools should develop in the children those abilities of judgment which are involved in intelligent buying. The development of "consumers'" judgment is a prominent aim today. At the present time, however, only 40 per cent of the courses of study indicate any instruction in buying, marketing, or costs of food. Figure 4 shows the general tendency through the

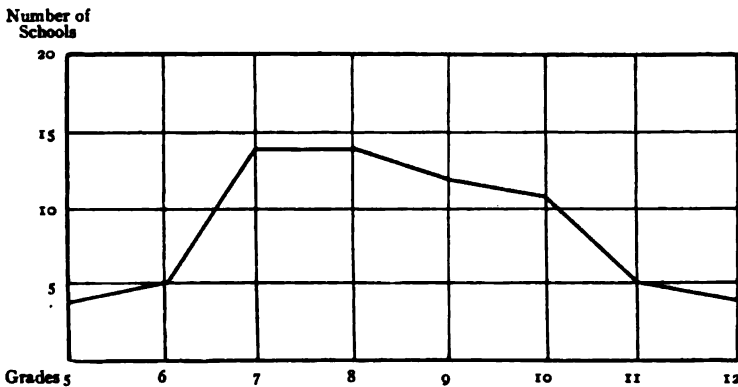


FIG. 4.—Number of schools teaching marketing in various grades of 67 school systems.

grades of the teaching of marketing. There is a slight tendency to place it somewhere from the seventh to the tenth school years. This lack of emphasis upon problems of buying reflects the general tendency for public-school courses to be concerned with skill and routine information and not with the fundamental social abilities which involve trained judgment. We shall comment upon this in various sections of this monograph. Figure 4 also shows that there is a very distinct tendency not to teach buying at all in the upper grades. Were it not for the important question of elimination of children in the junior high-school grades, it would seem wise that these problems of buying should be discussed in the upper high-school grades. As girls grow older, they are better equipped and more interested in this problem of buying, more likely to be in touch with financial affairs of the home and to have a

better idea of the value of money. Yet the subject should most certainly not be wholly omitted in the lower grades.

The tendency to ignore educational outcomes in constructing a course of study in home economics may be illustrated in many ways. For example, a definite statement is found in the printed course of study of one large school system that "only the teacher shall regulate the tension and length of stitch in machine sewing." Very likely this ruling was made in the desire to have the girls turn out only good technical work. From the standpoint of learning, however, such a procedure inhibits any possibility of having the pupils learn to operate a sewing-machine successfully. If even the rudimentary principles of machine operation which are to be taught can be used in the home activities of these girls, we should be teaching them under the same conditions of actual learning and doing which they will meet in their own practical home work.

Another point needing discussion in this connection is the extent to which these topics of economics of the home should be taught in subjects other than home economics. There is distinct overlapping here between the field of home economics and that of the social studies, general economics, and to some extent the commercial courses. Subsequent sections of this monograph urge the need of a careful consideration of this whole question of overlapping of content of the school subjects, especially in the intermediate grades.

3. *Types of material emphasized in teaching textiles.*—As the courses of study were analyzed, the material that pertains to textiles was divided into three general fields: (1) historical data concerning the textile industry; (2) data concerning the production and manufacture of textiles; and (3) facts for consumers concerning textiles. Figure 5 shows how these three kinds of textile materials are emphasized in schools. It is clearly to the credit of the supervisors who made the courses of study that so little emphasis is given to the history of textiles. It should be said that this material was introduced in these schools primarily because historical summaries are included in the textbooks. From the standpoint of social use it seems wise to omit the history of textiles, especially if the time given to home economics courses is limited. At the same time, we believe that certain historical facts of interest and importance to a clear understanding of home economics should be taught either in history courses or in courses in social studies. It is also gratifying to note that in only one city is the history of textiles taught in a home economics course which does not also touch upon



other phases of textile study. Clearly textile facts for consumers will be more worth while from the standpoint of social use than will the history of textiles.

Production and manufacture are overemphasized to the neglect of "consumers' facts." As indicated in the figure, our analysis shows that twice as many schools teach the production and manufacture of textiles in the lower grades as teach textile facts for consumers. The two subjects are taught above the ninth grade in about the same number of schools. We agree with the general practice to the extent that

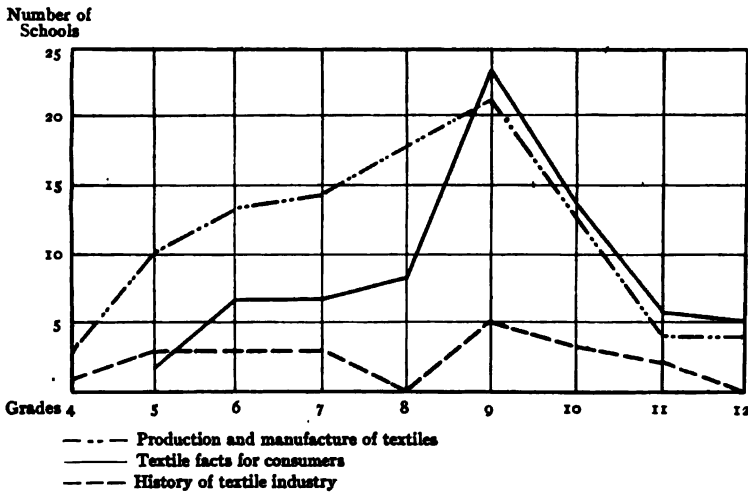


FIG. 5.—Number of schools emphasizing different topics in textile study in the various grades of 67 school systems.

a certain amount of material concerning the production and manufacture of textiles should be taught for a clear understanding of the wise consumption of textiles. Yet the question is pertinent whether it is necessary to teach the production and manufacture of textiles to fourth-, fifth-, sixth-, and seventh-grade children before introducing such topics as "testing for adulteration," "kinds of fabrics," etc., which are classified under "textile facts for consumers." Yet in about 50 per cent of the schools the study of textiles is so arranged. This is probably due in part to the fact that supervisors are handicapped by the dearth of textbooks which give material on "textile facts for consumers" for the elementary grades. If the teacher wishes to emphasize this phase of the work she literally must make her own text or outlines, and give all

the necessary information to the children in lecture or mimeographed form. This suggests that there is a very great need for an appropriate text in textiles for the elementary schools.

4. *Food classification and composition versus general principles of cooking.*—Figure 6 shows the number of schools which are teaching food composition and classification, nutrition, and general principles of cooking in various grades from the fifth to the twelfth inclusive. The three curves are very nearly coincident. With respect to these

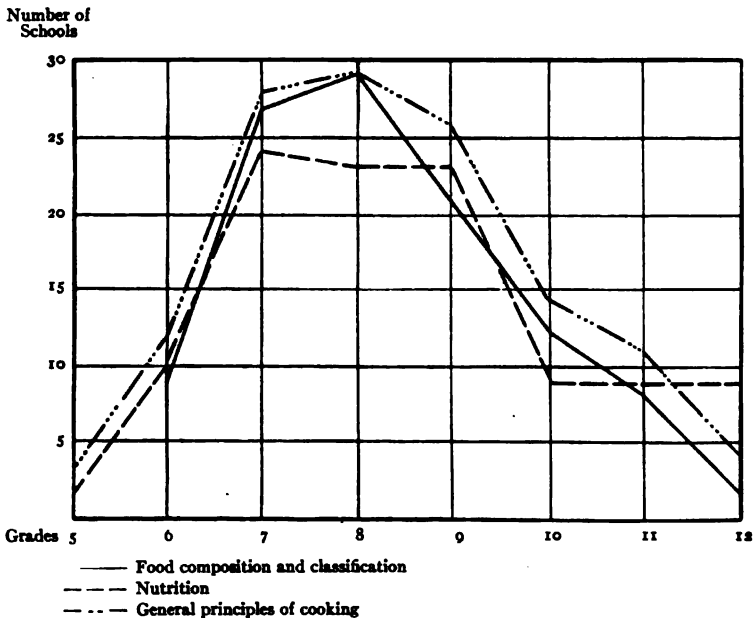


FIG. 6.—Number of schools emphasizing different topics in food study in the various grades of 67 school systems.

three elements in the general curriculum, practice has become very uniform. Such a figure, however, does not enable us to form any other definite conclusions.

5. *Order of projects shows no regard for "sequence."*—A fundamental criterion of organization of subject-matter in a course should be that the material is arranged in such sequential form that both technical difficulties and difficulties of a distinctly mental character are carefully graduated. One is amazed to find the chaotic condition of home economics with respect to the gradation of projects. Table II shows that

## HOW COURSES ARE ORGANIZED

15

**TABLE II**  
**YEAR OF SEWING IN WHICH CERTAIN PROJECTS ARE INTRODUCED IN 67 SCHOOLS**

[illegible]

any project of sewing may be taught in any year. For example, nine city systems have the cooking apron made in the first year of sewing; nine systems have it in the second year, and ten in the third year. It is not conceivable that cooking aprons can vary so in form of construction and degree of difficulty that they are equally well adapted to first, second, and third years of sewing. There is also considerable repetition from year to year in a single school. Table III shows the tabulation

TABLE III  
LIST OF PROJECTS INTRODUCED TWO OR MORE TIMES IN DIFFERENT  
SEWING COURSES OF A SCHOOL SYSTEM

PROJECTS	YEARS OF SEWING IN WHICH SAME PROJECT IS TAUGHT			
	School A	School B	School C	School D
Apron, sewing.....	1-2	1-4	2-4	.....
Bag, sewing.....	1-2	.....	.....	.....
Buttonholes.....	2-3-5	2-3-5	2-4	.....
Chemise.....	1-2	.....	.....	.....
Crocheting.....	1-3	1-4	.....	.....
Darning.....	1-2-3	1-2	.....	.....
Dress, cotton.....	1-2	2-3	1-3	1-4
Middy blouse.....	1-2	1-2	.....	.....
Nightgown.....	1-3	1-3	1-2	.....

of projects which were introduced twice or more in the different sewing courses of the same school system. For example, the nightgown is made during each of the first three years of sewing in two school systems, and in the first and second years of sewing in another system. In each case the garment was a kimono nightgown. It is hardly possible for two kimono nightgowns to be so different in form of construction that one is suited in degree of difficulty to the first and the other to the third or second year of sewing. The need for investigation and reorganization of our courses on a thoroughgoing basis of increasing difficulty to the learner is apparent. At present there is no established order of projects. The sequence of projects is clearly in a chaotic condition.

Courses should be arranged so that there is increasing difficulty for the learner—that the pupil may always find a real mental “pull” in the subject-matter of successive grades. Clothing courses are of such a nature that they depend not only on the informational content but also on the projects which are used to carry out the basic aim of developing ability to plan, lay out, and complete independently the original construction of a garment. Undoubtedly certain forms of con-

struction are more difficult from the standpoint of technique and from the standpoint of comprehension of the construction. The technical work in the project, objective in character, can be measured accordingly. On the other hand, the comprehension of the form of construction, subjective in character, is difficult to measure. For example, the construction of a middy blouse is more difficult to understand than the construction of an apron.

When one turns to the planning and making of other more complicated garments, differences in difficulty for the learner are less clear. It is not so easy to determine which is the more difficult for the learner to understand, construction of a kimono sleeve or of a set-in sleeve. In each case the understanding of the construction must be considered apart from the difficulty of mere making. It is, of course, easier for the learner to make the kimono sleeve than the set-in sleeve. Is it, however, easier to understand the construction of the kimono sleeve as the pattern is laid out on the material?

Shall projects be graded on a basis of increasing technical difficulties or in terms of increasing comprehension or mental difficulties? This is a basic question concerning the arrangement of home economics material. Whatever may be the answer to this question, the present writers are clear in their criticism that the present organization of home economics courses is not one of graded sequence. The following quotations from courses of study indicate the general practice: "Much the same work in the eighth as in the seventh grade, only more theory." "The scope of the work in the sixth grade is much the same as in the fifth grade." In one course of study it is stated, "The girls may choose between making a child's dress, a towel, and a napkin." Although this is an extreme example, it is apparent that the designers of public-school courses have given little thought to the striking differences in difficulty of learning and in educational value of such types of subject-matter. Apparently not even the slightest regard has been given in many of our city courses of study to this important question of sequence.

Thus we have summarized by five different types of examples the general situation with respect to the organization of home economics courses in the public-school grades. The conclusion appears to be direct: Movements should be inaugurated, through conference and discussion in teachers' associations and in the home economics press, for the thorough-going overhauling of the administration of courses that deal with food, clothing, and shelter.

## HOW THE COLLEGES CLASSIFY THE FIELD

The lack of agreement in thinking concerning even the scope of the field is illustrated very well by the different methods in which the field is organized and distributed by our various higher educational institutions. Certain colleges—for example, Teachers College—describe the field as that of “household arts,” and differentiate the two major subdivisions of the field as “domestic science” and “domestic art.” The University of Chicago describes the field somewhat more in accordance with the suggestions of the American Home Economics Association as “home economics,” and divides it into five sections: (1) home economics education, (2) food and nutrition, (3) household art, (4) home management, (5) institutional economics. The University of Minnesota describes the whole field as that of “home economics” and breaks this up into (1) food, (2) textiles and clothing, (3) institutional management. In the Oregon Agricultural College the scheme is as follows: home economics, with the subdivisions of domestic science, domestic art, home administration, and institutional management.

In our study of the literature of home economics and of the textbooks and books on the teaching of the subject, we have found this same chaotic condition of terminology prevalent. It is very clear, indeed, that the home economics group should move in the direction of standardizing the terminology as well as the scope of its field and organization.

As it was stated in the beginning, the aims of instruction as stated by the college leaders who are training public-school teachers of home economics are often much broader than the practice of the public-school teachers themselves. Home economics to the former generally means much more than the study of sewing and cooking. The broader point of view can be illustrated from quotations from a very recent book on *Teaching Home Economics*.<sup>1</sup>

Home economics is a subject that centers around the problems of the home and the other institutions whose problems are of similar nature. It includes a study of food, shelter, and clothing viewed from the standpoint of hygiene, economics, and art, and a study of the relations of the members of the family to each other and to society. This is a very broad conception of the meaning of home economics studies, for so often they mean merely cooking or sewing in the girl's program.

In addition these writers state:

It is true that this field of education for the home has no common terminology. It would probably be very helpful if it had. This lack of common

<sup>1</sup> Cooley, Anna M., Winchell, Cora M., Spohr, Wilhelmina H., and Marshall, Josephine A., *Teaching Home Economics*. New York: Macmillan Co., 1919.

terms leads to a great deal of confusion, especially as much state legislation is being enacted in relation to the teaching of home subjects in schools and it is often extremely difficult to interpret the various laws. . . . In some states the term "domestic science" means cooking, while in others it is used to cover the entire field of education for the home, that is, it includes such subjects as dressmaking, textiles, household management and housewifery, household sanitation, and cooking. Under other laws domestic economy is the inclusive term, or household economics or home economics.

These writers argue definitely for a common terminology. To this argument the writers of the present monograph subscribe heartily.

There can be little doubt, therefore, that some college workers in viewing their problems see the scope of home economics as a large and intensive field of education for young women—doubtless, also, to some extent for the education of young men. We would lay stress on one phase of the definition given above. It includes not only a study of food, shelter, and clothing, but also "a study of the relations of the members of the family to each other and to society." Analysis of the curriculum materials in public-school courses today leads to the conclusion that scarcely a beginning has been made in the direction of carrying this larger aim into the work.

## CHAPTER III

### TEXTBOOKS INFLUENCING THE CURRICULUM

Thus far we have presented a sketch of the general organization of courses in home economics. Our analysis must be carried more intensively into a survey of the concrete details of the curriculum itself. To do this one should analyze textbooks. In the past few years it has been clearly established that for definite knowledge concerning the content of our courses of instruction critical examination should be made of the printed materials which are used in the courses. We have already reported the analysis that was made of city courses of study. One striking conclusion from this analysis is that much of the printed material of this sort consists so completely of vague generalities as to tell us almost nothing as to the actual content of the curriculum itself. In collecting information concerning courses of study from several hundred cities we asked supervisors to send us copies of typewritten or mimeographed subject-matter used in their instruction. Very little material was received in answer to such requests. We conclude, therefore, that the subject-matter of home economics is still represented largely by three types of material: (1) by the content of textbooks used in the elementary and secondary grades; (2) by the content of reference books; or (3) by the content of books with which supervisors and teachers had been trained in their college work, and upon which they were forced to depend for the mere subject-matter of their curriculum.

*Method of determining which textbooks are most commonly used.*—To discover those books which are influencing the curriculum, the question blank reproduced on page 21 was sent to 300 cities, including two in every state. Most of the cities were above 15,000 inhabitants; a few smaller ones, however, are included. Two forms were sent. On Form I, which is reproduced here, data were collected for the elementary grades; on Form II, data were collected for the high-school grades, nine to twelve, inclusive.

Care was taken to define the exact grade limit so that the introduction of the junior high-school scheme would not confuse the interpretation of returns and to distinguish between books in the hands of pupils used as "basic texts" and books which were used as supplementary or reference material in the grade rooms or in the school library. The



FORM I  
DATA FOR ELEMENTARY GRADES, INCLUDING THE SEVENTH AND EIGHTH

COURSES OR SUBJECTS	AUTHORS AND TITLES OF BOOKS USED BY PUPILS AS BASIC TEXTS; I.E., THOSE FROM WHICH MOST OF THE READING OF THE TERM IS DONE		AUTHORS AND TITLES OF SUPPLEMENTARY OR REFERENCE BOOKS FROM WHICH A CONSIDERABLE NUMBER OF ASSIGNMENTS ARE MADE BUT WHICH ARE NOT USED CONTINUOUSLY ENOUGH TO BE REGARDED AS BASIC TEXTS	
	Authors	Titles	Authors	Titles
Textiles.....				
Sewing.....				
Dress design.....				
House planning, decoration, and sanitation..				
Cooking (e.g., preparation of meals).....				
Food production and manufacture.....				
Dietetics.....				
House management.....				
Marketing.....				

Name of supervisor of home economics.....Address.....

Name of city.....

nine headings of the question blank illustrate the basic "courses" or "subjects" which the analysis of city courses of study showed to be the most frequent scheme of classification.

Returns were received from 167 cities in 41 states. Exception might be taken to this small number, but it has been found from other similar surveys that the use of a small group of cities, if well selected, gives a true picture of the practice of the entire country. We give in Table IV the names of cities which are typical of the various population groups included within our study; those having a population above 300,000; 100,000 to 300,000; 50,000 to 100,000; 15,000 to 50,000, and under 15,000.

TABLE IV

## TYPICAL POPULATION GROUPS

Over 300,000 in Population	100,000 to 300,000 in Population
Los Angeles, California	Grand Rapids, Michigan
San Francisco, California	St. Paul, Minnesota
Chicago, Illinois	Kansas City, Missouri
Baltimore, Maryland	Omaha, Nebraska
Boston, Massachusetts	Jersey City, New Jersey
Detroit, Michigan	Columbus, Ohio
Minneapolis, Minnesota	Dayton, Ohio
Newark, New Jersey	Memphis, Tennessee
Buffalo, New York	Spokane, Washington
Cleveland, Ohio	
50,000 to 100,000 in Population	15,000 to 50,000 in Population
Mobile, Alabama	Little Rock, Arkansas
Hartford, Connecticut	Berkeley, California
Evansville, Indiana	Pasadena, California
Des Moines, Iowa	Stockton, California
Portland, Maine	Colorado Springs, Colorado
Manchester, New Hampshire	Meriden, Connecticut
Yonkers, New York	Pensacola, Florida
Oklahoma City, Oklahoma	Cedar Rapids, Iowa
Pawtucket, Rhode Island	Aurora, Illinois
	Joliet, Illinois
	Oak Park, Illinois
	Rockford, Illinois
	Newport, Kentucky
	Lewiston, Maine
	Waltham, Massachusetts
	New Rochelle, New York
	Poughkeepsie, New York
	Charlotte, North Carolina
	Durham, North Carolina
	Chattanooga, Tennessee
	El Paso, Texas
Under 15,000 in Population	
Phoenix, Arizona	
Twin Falls, Idaho	
Waterville, Maine	
Sault Ste. Marie, Michigan	
Stillwater, Minnesota	
Billings, Montana	
Webb City, Missouri	
Hudson, New York	

*Extent to which public-school instruction in home economics is based on the textbook.*—On studying the tabulated returns of the questionnaires one is impressed, first, by the fact that 100 per cent of the high schools are using basic texts or reference books. Equally important is the fact

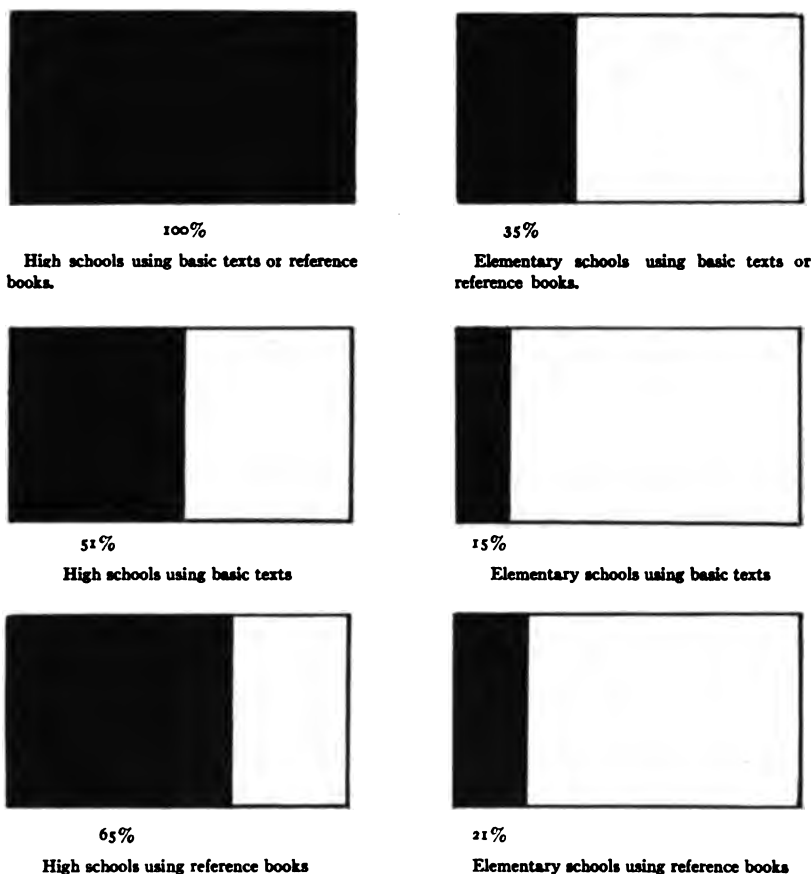


FIG. 7.—Percentage of high schools and elementary schools using basic texts and reference books in clothing and shelter.

that in the elementary grades public-school workers in home economics are just beginning to use textbooks. In clothing only 15 per cent of the elementary schools use basic texts. In food, the situation is slightly better, for more than one-third of the cities use basic texts, while approximately two-thirds use either basic texts or reference books (Figs. 7 and 8).

*Conditions in the elementary grades should be modified.*—From whatever angle we study the problem of the organization of home economics courses, we come back to the theme that we have not a continuous home economics curriculum in the elementary grades. The present writers believe that

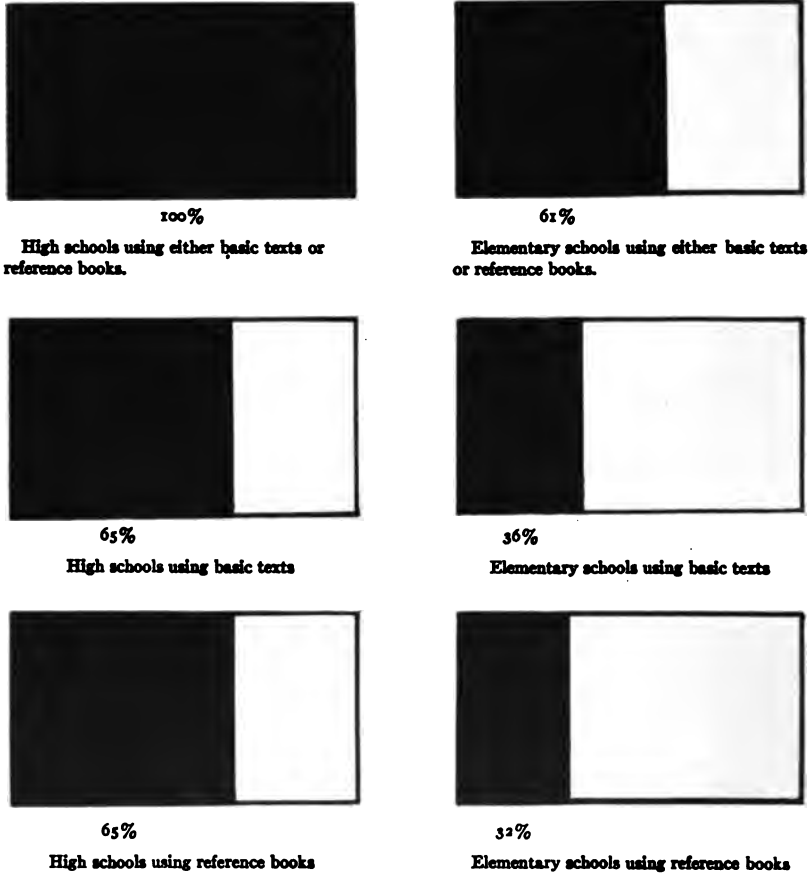


FIG. 8.—Percentage of high schools and elementary schools using basic texts and reference books in food.

the practical development of a course of study which is continuous through the grades depends upon the development of elementary-school books suited to the various stages of the growth of children. It is very clear, indeed, that city supervisors of home economics are unable to find textbooks which are adapted to their work.

## TEXTBOOKS USED

The reader will be startled to find that a total of 267 different books was reported as used in different school systems. Of these 267 books, 123 are used either as reference or as basic texts in clothing and shelter, while 144 are used in the study of food. Yet only a few books really control the course of study, for, of the total 267, 19 determine more than 95 per cent of the practice of the country. Of these, 10 are used in clothing and 9 in food. Eight of the 19 are also used as reference books in those high schools which do not use basic texts. Tables V and VI give the titles and authors of the books.

TABLE V

## TEN MOST COMMONLY USED BOOKS IN CLOTHING AND SHELTER

Baldt, Laura I., *Clothing for Women*  
Bevier, Isabel, *The House*  
Dooley, William H., *Textiles*  
Fales, Jane, *Dressmaking*  
Gibbs, Charlotte M., *Household Textiles*  
Hapgood, Olive C., *School Needlework*  
Izor, Estelle Peel, *Costume Design and Home Planning*  
Kinne and Cooley, *Clothing and Health*  
Kinne and Cooley, *Shelter and Clothing*  
Woolman and McGowan, *Textiles: A Handbook for Student and Consumer*

TABLE VI

## NINE MOST COMMONLY USED BOOKS IN FOOD

Bailey, Pearl L., *Domestic Science Principles and Application*  
Conley, Emma, *Nutrition and Diet*  
Greer, Carlotta C., *Textbook of Cooking*  
Kinne and Cooley, *Foods and Household Management*  
Morris, Josephine, *Household Science and Diet*  
Rose, Mary S., *Feeding the Family*  
Sherman, Henry C., *Food Products*  
Wellman, Mabel T., *Food Study*  
Williams and Fisher, *Theory and Practice of Cookery*

*College books used in the high school.*—As evidenced by this study, identical textbooks are used in a number of cases in the elementary grades, in the various years of the high school, and in college. High-school girls and students in the various years of college are not only reading the same subject-matter, but they are also engaged in learning and repeating the same skills and in constructing the same projects. This

situation cannot be condemned in too rigorous a fashion. In the early establishment of school subjects in the curriculum it has always been the case that books definitely planned for college students have been used in part or entirely in the high school. The same practice exists in home economics. Three of the ten most commonly used clothing books were planned for college readers, according to the statements of authors in the prefaces. Of the books on food used as "textbooks," one on nutrition was written as a "reference book." It is a very technical treatise. It could most conveniently be used as a reference book for college students, yet we find that this book is used in both high schools and elementary

TABLE VII

PERCENTAGE OF 167 CITIES USING EACH OF TEN BOOKS EITHER AS BASIC TEXTS OR AS REFERENCE BOOKS IN CLOTHING AND SHELTER, IN BOTH HIGH SCHOOLS AND ELEMENTARY SCHOOLS

TEXTBOOKS	BASIC TEXTS		REFERENCE BOOKS	
	High School	Elementary School	High School	Elementary School
A.....	61	24	26	42
B.....	27	12	52	30
C.....	9	.....	17	3
D.....	2	28	.....	14
E.....	3	.....	11	3
F.....	10	4	14	.....
G.....	.....	16	.....	.....
H.....	16	.....	11	5
I.....	12	4	12	20
J.....	20	.....	40	16

TABLE VIII

PERCENTAGE OF 167 CITIES USING EACH OF NINE BOOKS EITHER AS BASIC TEXTS OR AS REFERENCE BOOKS IN FOOD, IN BOTH HIGH SCHOOLS AND ELEMENTARY SCHOOLS

TEXTBOOKS	BASIC TEXTS		REFERENCE BOOKS	
	High School	Elementary School	High School	Elementary School
A.....	17.0	13.2	8.0	12.0
B.....	8.8	.....	11.7	3.5
C.....	38.4	8.0	29.4	35.0
D.....	47.6	12.1	35.0	23.0
E.....	.....	18.0	0.9	12.0
F.....	18.8	.....	27.0	3.5
G.....	4.9	2.0	12.8	8.7
H.....	10.8	.....	14.7	5.2
I.....	.....	8.0	7.1	21.0

schools as a reference book and occasionally as a textbook! In general, however, the adaptation of subject-matter to the general maturity of the student is better in the field of food than it is in that of clothing. In the latter field the three college texts referred to above are being used in a large percentage of the elementary schools which use basic texts. This reveals not only the great dearth of adequate elementary-schoolbook material, but also the uncritical attitude with which public-school people select home economics books.

The extent to which these textbooks are used is set forth in Tables VII and VIII. The letters and numbers which represent the texts in these tables do not correspond to the arrangement of authors' names in Tables V and VI.

It is assumed that the point of view and teaching emphasis in home economics is reflected adequately by the content of these nineteen textbooks and supplementary references. Therefore, for a discussion of the curriculum we turn to an analysis of the books.

## CHAPTER IV

### HOME ECONOMICS TEXTBOOKS: TECHNIQUE AND INFORMATION VERSUS THINKING AND APPRECIATION

One of the most important practices contributed recently by the quantitative movement in education has been the careful tabulation and scrutiny of the contents of school textbooks. Those engaged in this work have been much concerned with the answer to questions such as the following. In raising them here, we have in mind their application to the field of home economics.

1. To what extent does the home-economics curriculum provide for worth-while home-making "skills"?
2. Is the time of children in home economics classes devoted to acquiring information of social value?
3. Is sufficient opportunity provided for young people to develop powers of critical judgment—that is, of analytical thinking?
4. Are we so planning our curriculum and organizing our class exercises in home economics that there is promise that the instruction will eventuate in real ability to appreciate and enjoy?

Quantitative scrutiny of the contents of school textbooks will supply the evidence upon the basis of which these questions can be answered.

The ten books referred to in clothing and shelter and the nine books which determine instruction in food have been analyzed and the contents tabulated in a very detailed manner.

*The unit of tabulation.*—It was assumed in tabulating the content of these books that the emphasis which teachers give to various kinds of material and to the mental processes utilized is approximately proportional to the space devoted to the subjects and processes in the textbooks. Hence the unit of tabulation was the number of words devoted to the various phases of the subject.

Tables IX and X present in so far as space permits the detailed headings which were used in the tabulation of the contents of these books. We report these headings because we believe that only through a careful study of them can the reader secure a clear grasp of the method used in organizing the subject-matter for comparative study. This tabulation form was designed and redesigned by the writers of this mono-



graph in conference and was put through a process of revision until it was found that the subject-matter of the different textbooks fell readily under the various headings. Analysis of various phases of content included a separate study of methods of using illustrations, references, exercises, and questions. Thus every unit of space in each book was accounted for. The percentage of space devoted to each topic, division, phase, etc., was calculated. Summaries of these percentages have been used in our tables, and in the main supply comparable statistics. Before proceeding to a comparative study of the textbooks under consideration, however, we should discuss the value of such procedure, the standards for evaluating curriculum material, and the criteria for evaluating the subject-matter.

*Importance of analyzing textbooks: Training teachers in service.*—The tabulation of the contents of school textbooks for the purpose of the thorough evaluation of the curriculum is an important piece of educational criticism. It is a task which calls into play processes of judgment. Although necessarily partaking very much of routine, it provides one of the most stimulating devices for improving teachers in service. Superintendents and principals can use such a method to make their teachers constructively critical of their courses of study and to develop a point of view concerning aims of teaching. We suggest in passing, therefore, that it is a most important administrative device for the training of teachers in service in public-school systems.

#### STANDARDS FOR EVALUATING TENDENCIES IN CURRICULUM-MAKING IN HOME ECONOMICS

There is a great need for a complete program of selecting and arranging subject-matter. Courses of study in home economics should rest upon a definite twofold program which covers: (1) the selection, (2) the arrangement of subject-matter. Home economics leaders are in danger of taking up the same ineffective method of developing their curriculum that in many cases has been utilized in other established subjects. Public-school textbooks in the mathematical, historical, and scientific fields, for example, during the past two generations, have been constructed by elimination from, or accretion to, a stock course of study. New books are written from old ones. Revision consists merely of slight omissions of old material and the gradual addition of new. Periodically, at least, courses of study should be recast, not by this process of gradual accretion or elimination, but by inventorying all the curriculum materials available for home economics courses and by selecting or rejecting them for the

**TABLE IX**  
**HEADINGS UNDER WHICH THE CONTENT OF TEXTBOOKS ON CLOTHING AND SHELTER WAS TABULATED**

NAME OF BOOK	AUTHOR	DATE	TOTAL PAGES	TYPE OF SCHOOL	TEXTILES														
					Production	Manufacturing Processes													
						Spinning	Weaving	Finishing	Remanu- factured Fibers	Percentage									
					Geographical Distribution	Processes	Woolen and Worsted	Counting	Total Percentage	Processes	Weave Construction	Knitting	Total Percentage	Cotton	Flax	Wool	Silk	Total Percentage	
				Rural	Growth														
				Elementary	Classification of Fibers														
				High School	Preparation for Market														
				Normal	Marketing														
					By-Products														
					Preparatory Process														
					Total Percentage														
				EXERCISES															
				ILLUSTRATIONS															
				BLANK SPACE															

**TEXTILES—Continued**

Properties and Structure	Kinds of Fabrics	Hygiene of Clothing	Buying	Testing and Adulteration	Historical Data	Economic Aspect of Industry	Additional Fibers	TOTAL PERCENT-AGE
Microscopic								
Physical								
Chemical								
Total Percentage								
Tables—Cotton								
—Flax								
—Wool								
—Silk								
Total Percentage								
Under Garments								
Outer Garments								
Shoes								
Total Percentage								
Percentage								
Cotton								
Linen								
Wool								
Silk								
Total Percentage								
Spinning								
Weaving								
Fabrics								
Industries								
Total Percentage								
Percentage								
Percentage								

**SEWING**

Machine	Construction	Patterns	Stitches	Accounts	Care of Clothing	TOTAL PERCENT-AGE
Directions for Use						
Data						
Kinds						
Total Percentage						
Processes—Seams						
Under Garments						
Outer Garments						
Other Garments						
Total Percentage						
Drafting						
Percentage						
Commercial						
Percentage						
Embroidery						
Crocheting						
Knitting						
Plain Sewing						
Stitches						
Total Percentage						
Budget						
Percentage						
Mending						
Renovating						
Cleaning						
Laundrying						
Remodeling						
Storage						
Total Percentage						

MILLINERY								DRESS DESIGN																																																			
Construction						TOTAL PERCENT-AGE		Theory of Color				Mass		Principles of Design																																													
Introduction	General Suggestions	Frames	Wire	Covering	Bow-Making Art Principles			Total Percentage	Color Facts	Psychology	Harmonies	Total Percentage	Percentage	Types of Complexion	Percentage	Application of Color Theories	Application of Psychology	Total Percentage	Psychology	Percentage	Statement	Application	Total Percentage	Appropriateness	Historical Data	Total Percentage	Texture	Accessories	Total Percentage																														
<i>DRESS DESIGN—Continued</i>																																																											
Human Figure										Individuality										Miscellaneous										Ethical Consideration										Cost										Exterior of House									
Silhouette	Line and Color	Head and Hair	Corsetting	Total Percentage	Standard Fashion	Draping	Decoration	Total Percentage	Trimming	Foundation	Dress Form	Score Card	Outlines	Self-Trimming	General Directions	Equipment	Total Percentage	Percentage	Grounds	Material	Furnishing	Total Percentage	Choice of Site	Type of House	Appropriateness to Site	Entrances	Arrangement of Openings	Types of Building Material	Total Percentage																														
TOTAL PERCENT-AGE																																																											
<i>HOUSE PLANNING AND FURNISHING—Continued</i>																																																											
Interior of House										Principles of Design					Furnishings					Special Treatment of Rooms					Miscellaneous					TOTAL PERCENT-AGE																													
Arrangement of Rooms	Plan of Rooms	Heating	Ventilating	Lighting	Water	Sewage	Stairs	Hearth	Wood Finish	Total Percentage	Interior Decoration	Color	Total Percentage	Wall Covering	Floor Covering	Furniture	Furniture Woods	Draperies	Pictures and Plaster Casts	Total Percentage	Vestibule	Living-Room	Parlor	Dining-Room	Bath	Bedroom	Kitchen	Total Percentage	Appliances	Historical Data	Total Percentage																												



course in the degree to which they satisfy the criteria which have been set up in the program of curriculum-making. This study leads to the judgment that home economics, even more strikingly than the older subjects of the curriculum, has no such program. The present situation cannot be evaluated without one. Hence, a tentative scheme is outlined herewith.

1. *Selection of subject-matter.*—Two principles should control the selection of subject-matter: first, social worth; secondly, thinking value. Instructional materials in the home economics field must prove themselves of social value to a majority of the student body. The content of a course should be criticized in terms of the degree to which the subject-matter makes provision for thought training. The primary intellectual purpose of our course is to develop powers of judgment, to teach an appreciation of scientific law, and to develop abilities of analysis and scientific thinking. To carry out this basic aim the course of study should be organized in such a way as to provide an opportunity for the development of these powers. The course of study in home economics must not only contain socially worth-while material, but it must also co-operate with other subjects in the curriculum in providing training for the development of the scientific attitude. This can come only through constant practice in meeting problem situations. Only by practice in judging, in analyzing, in problem-solving, can one develop an appreciation of scientific law.

2. *Arrangement of subject-matter.*—The psychological criteria of sequence and of adaptation should control the arrangement. These fall under two heads: (1) technical difficulty; (2) the adaptation of material to the educational growth of the class in which it is used. Wherever possible, curriculum materials should be arranged developmentally. The first criterion controlling the general placing of principal divisions and of topics within these divisions is the sequence of technical difficulty. Reference has already been made to this matter in chapter ii. With this placement of subject-matter, writers and supervisors in home economics have been primarily concerned. The second criterion is even more important. The arrangement of a course of study, the materials of which have been selected upon principles of social use and thinking value, must be determined primarily by the developing maturity of the pupil. This means experimentation in the different grades of the elementary and secondary schools for the purpose of scientifically determining the best method of placing and arranging subject-matter.

WHAT DOES THE PRESENT COURSE EMPHASIZE: INFORMATION, TECHNIQUE, THINKING, OR APPRECIATION?

Let us now determine from the analysis of the textbooks the answers given by actual school procedure to the four questions asked at the beginning of the chapter. Let us find in how far the school course really does emphasize information, technique, thinking, and appreciational outcomes. Table XI and Figure 9 supply much data from a study of which we can at least partially answer these questions for the clothing and house-planning side of home economics.

EMPHASIS GIVEN TO VARIOUS SUBJECTS IN THE  
HOME ECONOMICS CURRICULUM

What types of subject-matter are studied by girls in our public-school courses? Table XI shows the large fourfold division of the

TABLE XI  
PERCENTAGE OF SPACE IN EACH BOOK ANALYZED GIVEN TO TEXTILES,  
DRESS DESIGN, SEWING, AND HOUSE PLANNING\*

Textbooks	Textiles	Dress Design	Sewing	House Planning and Furnishing
A.....	20.8	12.0	22.1	17.6
B.....	6.9	19.3	41.1	.....
C.....	21.0	20.1	48.3	.....
D.....	4.9	.....	72.5	.....
E.....	.....	31.6	.....	43.9
F.....	.....	.....	.....	57.2
G.....	28.1	5.5	29.8	0.3
H.....	75.7	.....	.....	.....
I.....	82.2	.....	.....	.....
J.....	85.0	.....	.....	.....
Range.....	4.9-85.0	5.5-31.6	22.1-72.5	0.3-57.2
Average.....	40.5	17.7	42.7	29.7

\* This table does not indicate the percentage of space given to illustrations, exercises, etc.

books in the clothing field: textiles, dress design, sewing, and house planning and furnishing. Of the ten books analyzed four deal with three of these divisions. Four of them deal with only one, Books H, I, and J have to do almost entirely with textiles; F is devoted to the house. Book E combines discussion of dress design and house planning. Book A endeavors to spread its material over the whole fourfold field of textiles, dress design, sewing, and house planning and furnishing. The mere reference to this non-uniform organization of subject-matter illustrates clearly the lack of standardization of the home economics curriculum.

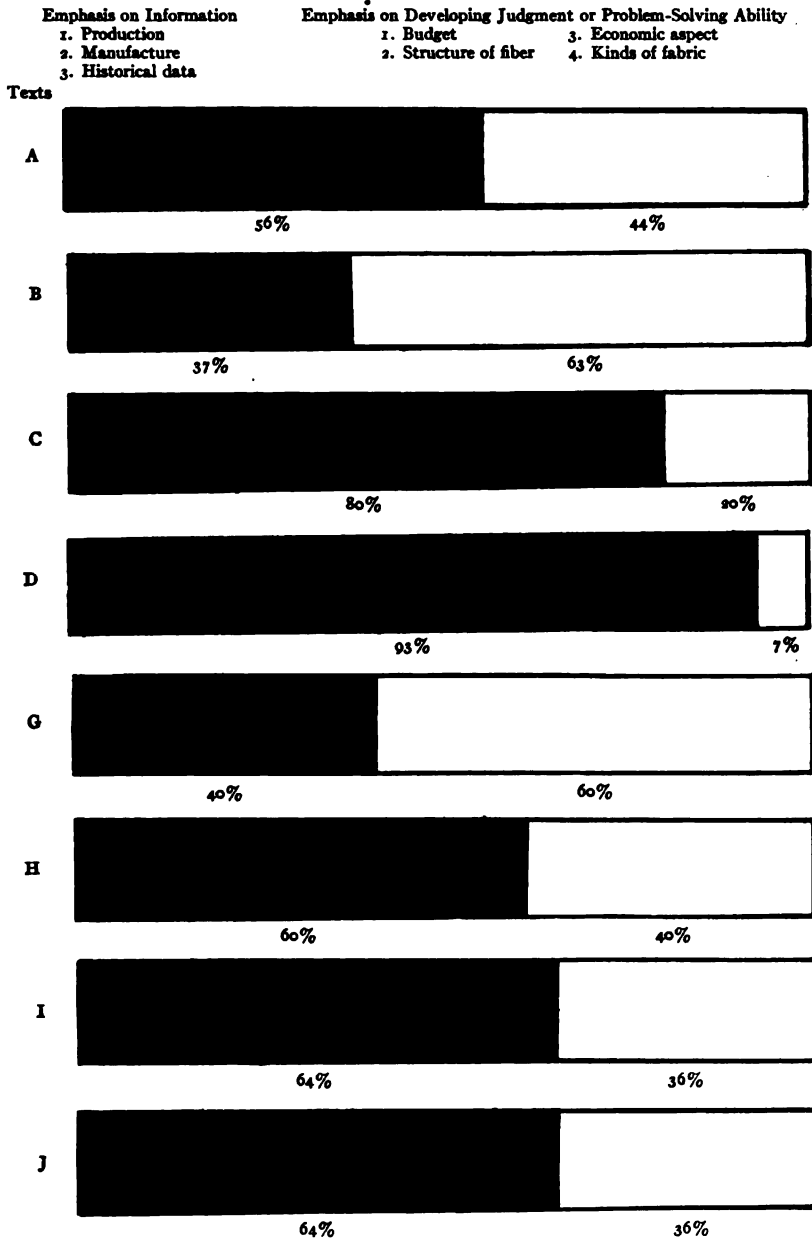


FIG. 9.—Comparison of the approximate percentage of emphasis in clothing books on (1) information, and (2) developing judgment or problem-solving ability.

Any comparison of the contents of textbooks is colored by this lack of uniformity in the fields covered by the books.

*The clothing course of study dominated by attention to textiles and sewing.*—Again, a study of Table XI leaves little doubt that the teaching of clothing in the majority of cases is combined with a discussion of textiles. For those books in which the material is combined with other subjects, textiles, in every case but one, outweighs all but sewing. It clearly shares with sewing the major part of the course. Note the percentages of space devoted to textiles and sewing when treated in the same text. For sewing they range from 22.1 to 72.5 with an average of 42.7 per cent; for textiles, from 4.9 to 85.0 with an average of 40.5 per cent. The relative amount of emphasis given to textiles in the books under consideration is well displayed in Figure 10.

*Variety of topics discussed within each subject; illustrated by textiles.*—The subject-matter itself within the various divisions of the clothing field shows the same lack of standardization as does the distribution of emphasis. In one of the books, textiles includes production, manufacture, properties and structure of fibers, kinds of fabrics, hygiene of clothing, testing and adulteration, historical data, economic aspects of the industry, and principles of design, weave construction, and patterns. Book C discusses some of these, but omits, for example, properties and structure of fiber, kinds of fabrics, and hygiene of clothing. Another book on textiles, Book J, covers most of the preceding topics but omits art principles in relation to design. This book, however, discusses the problem of budget-making.

#### INFORMATION-GIVING AND DEVELOPMENT OF TECHNIQUE DOMINATE THE COURSE

From a thorough analysis of the discussions of textiles in these books, we are convinced that the vast majority of the attention of the course is devoted to giving out information. Figure 9 gives the evidence for a statement of this kind. This figure presents graphically the relative attention paid to acquisition of information and to development of judgment in choosing wisely. There can be little doubt that on the average more than two-thirds of the attention of the textile course, for example, is devoted to information-giving. Production of fibers, manufacture of materials, the historical development of industries—these are the topics that engross the attention of children in public-school courses in textiles.

Care has been taken to group as problem-solving material any subject-matter through which it appeared possible to develop the weighing



Texts

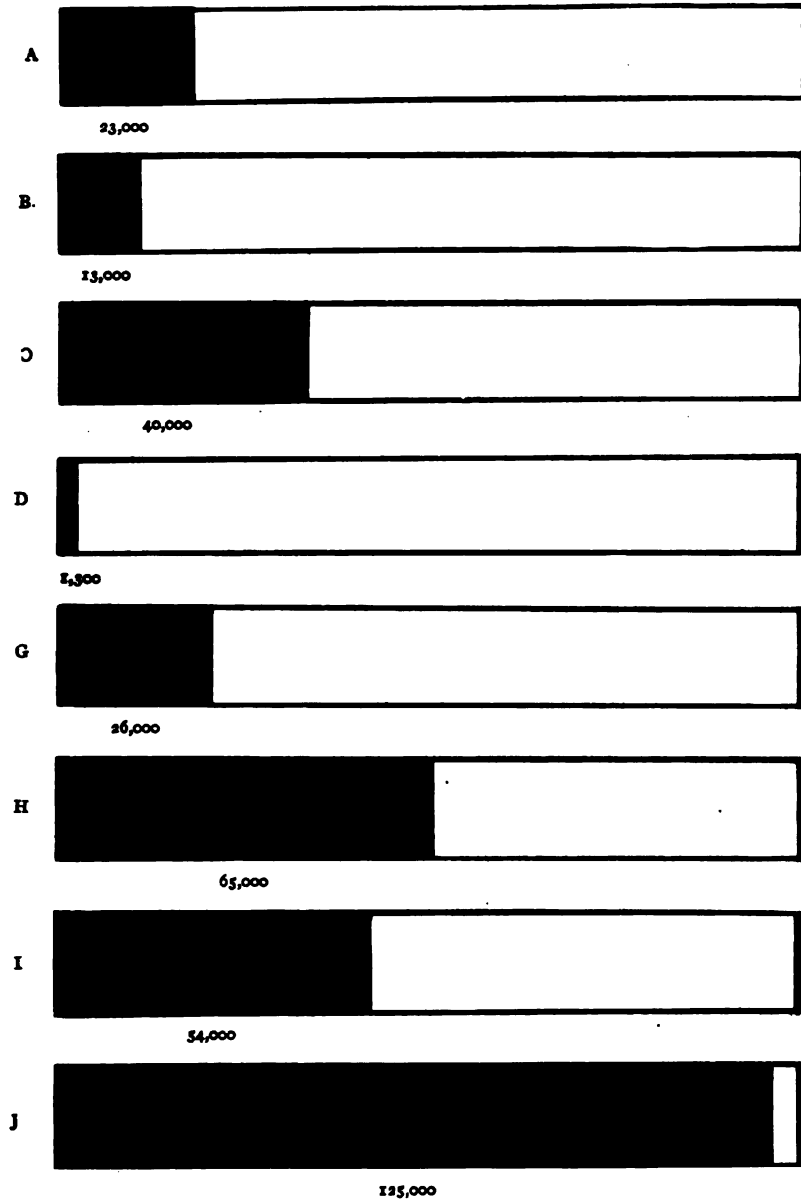


FIG. 10.—Amount of space estimated in number of words given to textiles in textbooks.

of values. If any error has been made, it has been in the direction of overweighting the amount of attention paid to reasoning abilities. For example, discussions of the structure of fibers, tests of adulteration, the economic aspects of the industry, the making and use of budgets, discussions of kinds of fabrics—such phases have been tabulated as material which provides possible training in the development of higher thought processes. Such a procedure certainly overweights rather than underweights “problem-solving.” Many leaders acquainted with actual instructional education in home economics will recognize, however, that a large part of all this material also is pure information.

ILLUSTRATION OF TYPICAL METHOD OF TREATING HOME ECONOMICS  
TEXTBOOK MATERIAL

*Emphasis in clothing texts.*—Note, for example, the way in which subject-matter is organized in one of the most widely used texts. We turn to a chapter on one of our most important textile industries. In this chapter the pupil meets in very brief paragraphs discussions of the most diverse kinds. General conditions in commerce and business are taken up in a half-page. The discussion is not sufficiently detailed, however, to give the pupil a real perspective of the big issues involved. Brief factual statements concerning the properties of the fiber follow. Such statements are from three to seven or eight lines in length. Each is stated in a matter-of-fact way, and uses terminology that is thoroughly technical. This discussion is succeeded by six pages of material describing the geographical distribution of the fiber. In succeeding sections the pupil reads a half-page on climatic conditions, methods of gathering the fiber, rates of work and pay, methods of preparing the fiber, with elaborate technical discussions of the machinery by which it is prepared for the market, and a digression a page in length on the scope of this particular textile industry in one country. This continues for twenty pages more, half-page presentations predominating, with rarely any attempt systematically to organize the discussions of the topic around a few major principles. The text abounds in Latin terms, and is concerned fundamentally with minutiae rather than with a few important principles which the child could understand and retain.

This particular book, which it must be remembered is used only as an illustration—a typical one, however—forms the basis of reading in a number of college classes and is the adopted text in textiles in 20 per cent of the secondary schools using basic texts. It is the consensus of opinion of many teachers and college students that the material is not organized

so that it will be retained or so that it will eventuate in a clear grasp of large underlying principles. It is inconceivable, therefore, that such texts can result in real "learning" outcomes with secondary-school pupils. We have used one minor illustration to present concretely two points: (1) that the curriculum through which young people are taught in home economics is overweighted in its emphasis on information and technique; (2) that we have been conservative in our criticism of the present emphasis on information because even material of the kind referred to in this section has been regarded as making possible provision for training in "judgment." It is our conviction that only a small percentage of public-school courses in home economics make any provision for training in judgment, thinking, or appreciation.

In regard to the sewing work, the analysis of courses of study and the minute tabulation that has been made of the content of the textbooks

**TABLE XII**  
**EMPHASIS GIVEN IN CLOTHING BOOKS TO PURE SKILL, SKILL AND PROBLEM-SOLVING, INFORMATION, AND PROBLEM-SOLVING**

Textbooks	Skill	Skill and Problem-Solving	Information	Problem-Solving
A.....	37.5	15.5	14.5	7.1
B.....	72.2	19.3	5.3	2.8
C.....	66.9	28.1	4.5	0.0
D.....	58.7	15.2	12.0	0.0
G.....	51.6	2.0	22.8	7.0
Range.....	37.5-72.2	2.0-28.1	4.5-22.8	0.0-7.1
Average.....	57.3	16.0	11.8	3.4

leave no room for doubt that teachers are fundamentally concerned with manual skill. Furthermore, such work occupies a large proportion of the time of the clothing courses. Such conclusions are based on the findings in Table XII, in which are given the percentages of material in clothing books devoted to skill, skill and problem-solving, information, and problem-solving.

The subject-matter relating to sewing in the five books which have been analyzed was divided among four groups: skill, skill combined with problem-solving, informational material, and problem-solving. It will be generally conceded that machine sewing, hand sewing, and the technique required in garment construction are skills; that the planning of a garment, the drafting of the pattern, or the alteration of the commercial pattern involves a certain emphasis on skill, but may



TABLE IX—Continued

MILLINERY										DRESS DESIGN																								
Construction							Theory of Color							Mass		Principles of Design																		
Introduction	General Suggestions	Frames	Wire	Covering	Bow-Making	Art Principles	Total Percentage	TOTAL PERCENT- AGE	Color Facts	Psychology	Harmonies	Total Percentage	Principles	Percentage	Types of Complexion	Percentage	Application of Color Theories	Application of Psychology	Total Percentage	Psychology	Percentage	Statement	Application	Total Percentage	Appropriateness	Historical Data	Total Percentage	Texture	Accessories	Total Percentage				
DRESS DESIGN—Continued										HOUSE PLANNING AND FURNISHING																								
Human Figure		Individuality		Miscellaneous					TOTAL PERCENT- AGE	Ethical Consideration		Cost		Exterior of House																				
Silhouette	Line and Color	Head and Hair	Corseting	Total Percentage	Standard Fashion	Draping	Decoration			Total Percentage	Trimming	Foundation	Dress Form	Score Card	Outlines	Self-Trimming	General Directions	Equipment	Total Percentage	Percentage	Grounds	Material	Furnishing	Total Percentage	Choice of Site	Types of House	Appropriateness to Site	Entrances	Arrangement of Openings	Types of Building Material	Total Percentage			
HOUSE PLANNING AND FURNISHING—Continued																																		
Interior of House					Principles of Design		Furnishings			Special Treatment of Rooms				Miscellaneous		TOTAL PERCENT- AGE																		
Arrangement of Rooms	Plan of Rooms	Heating	Ventilating	Lighting	Water	Sewage	Stairs			Fireplace	Wood Finish	Total Percentage	Interior Decoration	Color	Total Percentage		Wall Covering	Floor Covering	Furniture	Furniture Woods	Draperies	Pictures and Plaster Casts	Total Percentage	Vestibule	Living-Room	Parlor	Dining-Room	Bath	Bedroom	Kitchen	Total Percentage	Appliances	Historical Data	Total Percentage

This comparison does not enable us to draw clear-cut conclusions concerning the opportunity provided by these books for training in reflective thinking. Therefore a separate analysis was made of the six books. The percentage of each text devoted to skill, the percentage to information, and that to reflective thinking were tabulated and computed separately. Table XVI gives the results.

TABLE XVI  
PERCENTAGES OF FOOD TEXTS GIVEN TO SKILL, INFORMATION,  
AND REFLECTIVE THINKING

Textbooks	Skill	Information	Reflective Thinking
A.....	3.3	38.3	19.8
B.....	8.2	41.4	25.9
C.....	1.6	44.0	20.5
D.....	5.7	58.4	26.6
E.....	6.4	64.3	11.5
F.....	2.8	56.5	13.7

It should be noted that much the largest part of each of the six books is devoted to information-giving—from 38.3 per cent to 64.3 per cent—and only 11.5 per cent to 25.9 per cent to reflective thinking. Under acquisition of skill all subject-matter was included that could be taught as "skill," even though it was not sufficiently emphasized or repeated often enough really to result in such skill. The following items are illustrative of such material: measurement, table serving, cleaning, care of utensils, daily routine. All subject-matter included under recipes, classification of foods, food production, and housewifery (omitting the two items mentioned under skill) was classified as information.

Under reflective thinking was included any discussion of food principles, nutrition (excepting one item of food classification), marketing, sanitation, and household budgets.

This material was so grouped because it is possible to teach it on a higher level than that of merely fixing associations. It is very probable, however, that most teachers using these textbooks use the material in a routine manner, emphasizing information. A considerable amount of subject-matter which has been classified as reflective thinking probably would be more properly classified as information.

#### TABULATION OF MATERIAL LEADING TO PROBLEM-SOLVING ABILITY

We found less than 1 per cent of subject-matter in any of these books in which real problems are presented. It is clear that the development of the ability to reason has been disregarded in the organization

of the subject-matter. Occasionally in questions and experiments one finds a situation presented which is really problem-solving material.

A careful canvass was made to discover "experiments" which were presented in true problem-solving form. It was found that in the presentation of all experiments the writers find it necessary to name the reagents which are to be used—presence or absence of heat, alkali, acid. They also describe somewhat in detail the method of conducting "experiments." It is clear, therefore, that these attempts to set up experiments in food books for the public schools limit themselves to interesting the pupil in new methods. An illustration of an experiment where the student would be most interested in the method is as follows: "Boil water in a small saucepan closely covered. Note the sound of the water just before boiling and the change in sound as the boiling begins." Occasionally one finds an experiment set so as to arouse the curiosity of the pupil as to the result. Here is an illustration of an experiment. "Test a bit of cream of tartar with litmus paper. Is it acid or alkaline in reaction?"

Situations like these cannot be "problem-solving" for children in the elementary or secondary schools at the present time. For such material to become a "problem" situation and for the pupil to proceed to its solution, she must have information as to the physical and chemical changes produced in matter by heat, acid, and alkali. If such facts had been mastered in some other course in science, or in previous phases of the home economics course, the student upon being presented with the problem could, perhaps, be expected to analyze it in terms of these reagents. The second definite lack in the training of the pupil is in our failure to develop the technique of conducting experiments. We have no standardized procedure in our present books. The method of carrying out any proposed experiment must be described in detail each time.

Still more direct evidence is at hand to show that these experiments cannot result in problem-solving ability. There is a distinct failure to organize the conclusions which are reached as a result of the experiment in such a way as to teach children fundamental scientific principles. With such subject-matter as this, home economics is missing its great opportunity for the development of problem-solving ability and the setting up of scientific attitudes. With no phase of its subject-matter is there better opportunity to secure these important generalized outcomes. If home economics is to be recognized as a great applied science, it will be through the organization of just such material as this.

## IS THE INFORMATION GIVEN IN OUR COURSES OF SOCIAL WORTH?

Our first criterion for the selection of subject-matter is social value. We are very much concerned in evaluating the kind of information which is given—especially since so much attention is given to it. To answer this question in detail is beyond the scope of the present report. Only through evidence which will be collected by years of investigation can a satisfactory evaluation be given. One cannot analyze home economics textbooks without becoming very skeptical of the social value of much of their content. An illustrative sketch has been given of the type of material in a typical book on textiles. Another illustration can be found in the comparison of methods of treating the subjects of commercial patterns and drafting patterns.

*Teaching the use of commercial patterns versus training in the drafting of patterns.*—A large proportion of women and girls make use of commercial patterns either in doing their sewing or in having it done. To satisfy the criterion of social worth, the curriculum should provide an adequate discussion of the use of commercial patterns. In order to develop an understanding of how to choose, alter, and use commercial patterns, texts should go into the subject thoroughly. Those who emphasize the drafting of patterns maintain that this training develops a better understanding of the commercial pattern and gives the requisite foundational knowledge.

While this is in a measure true, the material of Figure 11 shows that the present tendency of our textbooks distinctly is to overweight the discussion of the drafting of patterns. In the same five books referred to later in the discussion of art principles, we find the percentage of space devoted to commercial patterns as contrasted with that devoted to drafted patterns, as follows: 0.9 per cent contrasted with 3.7 per cent; 0.9 per cent contrasted with 7.1 per cent; 1.8 per cent contrasted with 12 per cent; 1 per cent contrasted with 11 per cent. In only one, Book G, is the emphasis on commercial patterns larger than that on the drafting of patterns—this case, 3.7 per cent contrasted with 0.3 per cent to the drafting of patterns.

*Present textbooks tend to ignore the importance of the "budget."*—Analysis of the contents of these books shows that the authors have almost entirely ignored the possibilities of using the budget as curriculum material. In books on clothing, only three discuss the budget in any way. They give, respectively, 1.3, 1.1, and 6.5 per cent of the entire space of the book to this problem. Of the books in food, three refer to the keeping of household budgets. Book B devotes 3.8 per cent of



the entire book, Book E devotes 0.46 per cent, and Book F, 0.75 per cent to this subject. The conclusion is clear that these writers are not especially concerned with the important economic problems of the budget. Yet the material is of great social value. Through the right discussion of the individual and family budget, sound training in one of the most important elements of good citizenship can be given.

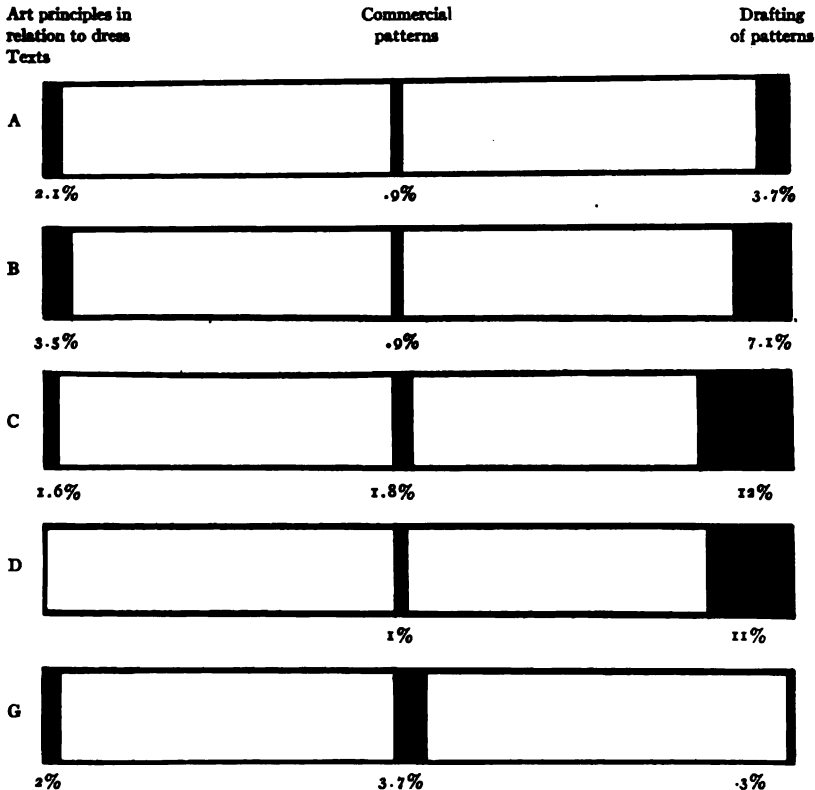


FIG. 11.—Relative amount of space given to (1) art principles applied to dress; (2) commercial patterns; (3) drafting of patterns.

*Informational material is not organized in problem-solving form.*—Even when the information is without question of social value (and we agree that one of the aims of the course is that of fixing socially worthwhile facts), subject-matter could be presented in problem form. This has not been done. The discussions of the course could be phrased in question form. Pupils could be faced constantly with problem situations,

with issues about which they must reflect. Experiments can be organized so that the pupil will be induced to disentangle some problems. Clearly the gain to the pupil in "thinking" value would be far greater than that which follows upon the mere acquisition of information.

We scrutinized critically the uses made of questions in textbooks. The study showed that nearly all the questions were worded so as to force specific recall of the words stated in the text. Only occasionally questions were put so as to offer real difficulties and to develop powers of judgment. The following is an example of the type of questions most frequently found in these textbooks: "What is the proportion of flour and liquid for one cup of white sauce for vegetables?" The response involves direct memory. Training of this sort does not call into play reflective thinking. Occasionally questions were found, however, apparently planned for the purpose of developing the organizing powers of the pupil by causing her to rearrange facts which have already been presented in another way. For example: "Make a list of strong, of sweet, and of mild flavored vegetables." A third type of question, and one which is clearly of the greater educational value, is to present to the pupil a problem clearly and definitely: "What other foods must be served with potato to make a meal complete? Find the cost of potatoes in your locality. Estimate the cost of a dish of mashed potatoes for five people."

Another illustration of the degree to which our curriculum falls short of providing sufficient opportunity for training the judgment of young people is in the application of art principles. Clearly the understanding of art principles as an aid in selecting beautiful and harmonious furnishings of fabrics is a desirable asset in securing pleasing results. If children are to be taught habitually to arrange furnishings well in the home, to choose the right kinds of materials in dress, to select the right design, etc., then the curriculum must definitely set up materials through which these outcomes can be secured. Figure 11 shows, for five commonly used books, the percentage of space of the textbooks devoted to art principles in relation to dress. Note what the figures are: 2.1 per cent, 3.5 per cent, 1.6 per cent, 2 per cent.

This analysis means that not more than five to ten pages of discussion, illustration, problem-solving, etc., are devoted to the entire problem of developing art principles in relation to dress design, house furnishing, or fabrics. Is not the conclusion sound that such an inadequate amount of attention to an important outcome from school studies, and one which is very difficult of attainment, cannot possibly lead to satisfactory

results? The need for preparing textbook material and of revising classroom emphasis so that an opportunity may be provided for developing habits of sound judgment and of wise choice is quite clear. We shall be able to teach children to enjoy the objects of their environment only by surrounding them with good things and by constantly calling their attention to the characteristics which are in accord with principles of art. The school can teach appreciation only through the constant utilization of intellectual methods. There is good reason to believe that for those who are not by nature unusually sensitive, appreciation can be set up effectively by ideas; to have one's attention called to the principle of design underlying the arrangement of furniture in a room which is satisfying will lead eventually to enjoyment of such an arrangement. The school must recognize its important function of developing these enjoyment outcomes. It is inconceivable that it can serve this function except through the introduction of subject-matter which is so planned as to eventuate in such outcomes. The goal, no doubt, is that of making automatic the sensing of proper arrangements. The means of arriving at this are twofold: (1) through the careful presentation of principles of arrangement, reasons why this arrangement of line is pleasing, and why that arrangement is disquieting or inharmonious; (2) by providing an opportunity in the project work by which practice in application of these principles can be secured. Through the twofold agency, therefore, of intellectual explanation and sufficient practice, the school may hope to have its instruction result in some degree of aesthetic appreciation.

#### EMPHASIS DEVOTED TO VARIOUS SUBJECTS AND TOPICS IN FOOD

There are six major divisions of the food field: cooking, nutrition, marketing, food production, sanitation, and housewifery. The percentage of space in each of nine books devoted to each of these phases of the work is shown in Table XVII.

The books are classified in two groups, Group I including the six divisions of the field. The books in Group II deal with nutrition, marketing, food production, and sanitation, but omit cooking and housewifery. The comments that were made on the clothing books can practically be duplicated. There is almost no agreement among writers of food textbooks regarding the subjects which should be emphasized or the proportional space which should be given them.

The most striking finding, however, is that cooking dominates the course, the range of space being from 25.4 per cent to 49.5 per cent.

Paralleling this outstanding emphasis upon routine material is the great dearth of material in the field of nutrition. No phase of the

subject-matter in our home economics courses that is worthy of occupying a central space in the food curriculum is more understressed than that of nutrition. We believe that it offers unusual opportunity for the training of children both in socially worth-while information and at the same time in real problem-solving ability. With this type of subject-matter, if with any in the whole home economics field, it should be possible to organize the curriculum so as to have it serve the two important purposes. A careful scrutiny of the textbooks used in the schools, however, shows that the leaders are missing their opportunity. It is of interest to note that the textbooks that devote the largest

TABLE XVII  
PERCENTAGES OF SPACE IN EACH OF NINE FOOD BOOKS GIVEN TO COOKING, NUTRITION, MARKETING, FOOD PRODUCTION, SANITATION, AND HOUSEWIFERY

TEXTBOOKS	COOKING	NUTRITION	MARKETING	FOOD PRODUCTION	SANITATION	HOUSEWIFERY
Group I						
A.....	37.8	14.8	0.70	8.40	.....	3.01
B.....	25.4	15.5	7.89	3.00	0.88	17.70
C.....	29.8	16.5	2.27	4.15	1.22	7.40
D.....	36.9	19.7	4.03	4.90	0.64	10.4
E.....	49.5	18.4	2.40	2.50	0.10	15.6
F.....	46.3	10.7	1.40	3.80	1.03	8.03
Group II						
G.....	.....	46.8	4.6	10.2	1.7	.....
H.....	.....	58.1	10.5	.....	.....	.....
I.....	.....	21.8	2.1	28.3	15.5	.....

amount of space to cooking give the smallest amount to nutrition, and vice versa.

*Neglect of marketing.*—Just as there is little or no emphasis upon intelligent buying of clothing, so the textbooks in food almost totally neglect this important problem. Note, for example, the range of 0.7 per cent to 7.89 per cent in the space devoted to marketing. Contrasted with this it is astonishing to find that textbook writers in this field are actually devoting more space to the discussion of fuels, stoves, combustion, etc., than they are to these important problems of buying. There is a total lack of evaluation of both the social and the psychological importance of different types of subject-matter connected with food. Long and technical explanations of food production and manufacture or of certain phases of nutrition are given. Some of the textbooks in

cooking devote a relatively large amount of space to a detailed discussion of the different kinds of stoves. The historical development of stoves is described in detail from the earliest to the most modern types in current use.

#### ORDER IN WHICH SUBJECTS AND TOPICS ARE INTRODUCED INTO THE COURSES

In this report there has been set up as the criteria which should control the arrangement of subject-matter in the course, technical sequence within the subject-matter and the psychological principle of "learning." Tables XVIII, XIX, and XX illustrate the present practice of introducing subjects and topics in the clothing and food textbooks.

Table XVIII shows the order in which five main subjects of the clothing field are introduced in five commonly used textbooks. These

TABLE XVIII

ORDER IN WHICH PRINCIPAL SUBJECTS ARE INTRODUCED IN FIVE COMMONLY USED TEXTBOOKS DEALING WITH VARIOUS PHASES OF CLOTHING

Textbooks	Textiles	Dress Design	Sewing	House Planning and Furnishing	Millinery
A.....	2	4	3	1	5
B.....	1	2	3	.....	.....
C.....	2	1	3	.....	.....
D.....	2	.....	1	.....	.....
E.....	.....	1	.....	2	.....

subjects are textiles, dress design, sewing, house planning and furnishing, and millinery. This difference in order is caused in part by the fact that the five texts do not canvass the same fields. However, whenever textiles is combined with dress design and sewing, it is significant that in the majority of cases it precedes either of the other two. It is agreed that experience in handling materials, which results from the study of textiles, shall be gained before dress design is attempted. Furthermore, there is a distinct tendency, as shown by these books, to provide an opportunity for the development of some skill in the constructive processes and an understanding of patterns before the detailed study of costume design is undertaken. Although home economics is a new subject, these tendencies toward general agreement as to the order of introducing main subjects themselves are apparent from a general analysis of the curriculum.

The order in which these main topics in food (excluding illustrative material and statistical material) are presented in five commonly used books shows distinct lack of uniformity, as may be seen by Table XIX.

It is quite clear that there is no agreement as to which kind of subject-matter provides the proper introduction to the study of food. Apparently no experimental evidence is available to guide the decision.

TABLE XIX

ORDER IN WHICH PRINCIPAL SUBJECTS ARE INTRODUCED IN FIVE COMMONLY USED TEXTBOOKS DEALING WITH VARIOUS PHASES OF FOOD

Textbooks	Experiments	Recipes	Nutrition and Production	Housewifery	Cost of Foods	Principles	General Directions
A.....	2	5	1	.....	.....	3	4
B.....	4	6	1	.....	2	3	5
C.....	1	2	3	3	3	.....	.....
E.....	1	2	1	.....	.....	.....	.....
F.....	2	5	1	.....	.....	3	4

The study of the order of presentation of the material has been continued by an analysis of the order of topics presented in cooking. Table XX gives the order in which seven main topics are introduced in the course.

TABLE XX

ORDER IN WHICH SEVEN MAIN TOPICS ARE PRESENTED IN THE TEACHING OF COOKING IN SIX COMMONLY USED TEXTBOOKS

Textbooks	Fruits	Vegetables	Beverages	Cereals	Fats and Oils	Eggs	Milk
A.....	1	3	.....	2	4	.....	.....
B.....	.....	1	.....	2	.....	3	4
C.....	1	2	.....	5	.....	3	.....
D.....	.....	1	.....	2	.....	3	4
E.....	2	3	1	4	.....	.....	5
F.....	3	1	.....	2	.....	.....	.....

There is a much larger agreement as to the kinds of food that should be presented first in teaching cooking. Two texts begin with fruits, three with vegetables, and one with beverages.

It will be helpful to state certain assumptions that may aid in determining which foods should be discussed first.

1. Foods requiring a small amount of skill in their preparation. For example, the cooking of a vegetable or fruit containing one food constituent.

2. Foods simple in composition, so that the effect of the application of heat upon this one constituent could be noted without the result being complicated by another food constituent.

3. Economical use of food in season. Fresh fruits and vegetables are generally cheaper in the fall; therefore beginning cooking lessons involve the use of these foods.

Apparently these three assumptions seem to control the character of the introductory lessons in food. To date no experiments based on studies of how children learn, have been published showing which type of food should be presented first.

*Methods of presenting different lessons on food vary.*—Four of the five books present some phase of nutrition of the food first. Two introduce the discussion by experiments. In the preface of two of the books the following method is suggested:

The main discussion or recitation must accompany or follow the application. Students are most interested in the performance of an experiment or a cooking process, and when practice precedes a recitation, they learn to think and do for themselves, and therefore get a better understanding of the theory.

A second author gives the following:

The theory of a process in cooking is understood much more easily after than before experience with that process. For this reason teachers are urged to reduce explanation to a minimum until pupils have had some practice in the process to be explained. . . . It not only gives better results from cookery instruction, but it favors the acquisition of skill by pupils, and increases their interest in the work.

Two other authors advise the use of the reverse order of procedure.

This study of the variation of the order of presentation shows that as yet no one or two methods have been found to be best. We take this opportunity of emphasizing again that such methods can be developed only by a careful scientific study of the development of subject-matter, of the way in which children learn, and of best methods of adapting the two.

#### CONTRAST OF HOME ECONOMICS WITH OLDER SUBJECTS OF THE CURRICULUM

In each of the established academic subjects of the curriculum, the order of introducing topics is thoroughly standardized. For example, the ten most commonly used first-year algebras introduce the twenty main topics of the course in almost the same way. Rarely does a topic get out of line in more than one or two places. The same "lock-step" is apparent in the treatment of the subordinate topics of these main divisions themselves.

Home economics, however, is a newcomer in the curriculum, and the order of introducing kinds of subject-matter has not been at all standardized. It will be fortunate indeed if the leaders in this field can recognize in their discussions of this important problem of gradation of material a criterion other than that of mere technical sequence. Paralleling the use of this principle of arrangement in determining the order of presentation there should be a thorough use of the psychological principle of arrangement of subject-matter according to "learning" difficulty. The writers of this report believe that through experimentation and detailed discussion, in conference and in the press, it will be possible to come to general agreement as to the best order of introducing subjects and topics within the whole public-school curriculum. We believe, however, that it cannot come except through a stimulating discussion which is based upon careful thinking and experimentation. Again we recur to what has been said before. If textbooks in the field are constructed on a program which will satisfy the psychological criterion of arrangement, then through the experimental use of such textbooks the best arrangements of material will be revealed. We should scrutinize the contents of our courses of study—the way in which material is organized, the detail with which it is presented, the illustrations which are used, and the extent to which the material is concrete or abstract—always holding in mind this fundamentally important criterion of organizing subject-matter in accordance with "how children learn."



## CHAPTER V

### INADEQUATE PURPOSES FOR TEACHING: THE MASTERY OF TECHNIQUE AND INFORMATION

There is a distinct need for a clear statement of aims and outcomes of teaching. The construction of a scheme of home economics education for the public schools which is sound socially and psychologically must rest upon a clear statement of educational objectives and outcomes. There are two ways of determining current instructional goals. To the first we have already resorted, namely, that of analyzing the curriculum.

There is another approach to this problem of determining teaching aims: analysis of the literature of the field. It is one which has been canvassed but little in the history of home economics. We have been unable to find summarized statements of this sort in the publications of home economics workers. Only two reports have been found by those conducting the present inquiry which are helpful in this respect. These were written, one by a professor of education in one of our state universities, the other by a specialist in city-school survey work. A summary has been made, therefore, of general aims and outcomes of teaching as they are stated by home economics leaders and teachers themselves. To five important sources we have turned:

1. The courses of study of city public-school systems discussed in chapter ii have been tabulated because they present the point of view of supervisors of home economics.

2. The prefaces, forewords, and contents of nineteen currently used textbooks have been canvassed. The same books discussed in chapters iii and iv provide the material for this chapter, only twelve out of the total of nineteen containing material of value. The culling out of statements of teaching function from this second source has reinforced the conclusions drawn from a detailed analysis of the books themselves. It enables us to state in succinct form the specific purposes behind the selection and arrangement of the content to which we have already referred. It will be helpful to keep in mind also that the material from this source presents fundamentally the point of view of college writers of home economics textbooks—textbooks which are used, however, in the public schools.

3. Our study has endeavored to report accurately the point of view of home economics leaders as presented in convention and conference discussions and in their professional literature. For this purpose statements of objectives have been summarized from the two principal publications of home economics workers—the *Journal of Home Economics* for the years 1909-19, inclusive, and the *Annual Proceedings of the Lake Placid Conference on Home Economics* for the years 1899-1909 inclusive. This material presents in a new form and under different conditions the point of view of much the same group of leaders as those concerned with the writing of textbooks.

4. From the points of view of home economics workers themselves, which are summarized in our first three sources, we turn to the writings of leaders in the general educational field: professors of education, authors of textbooks on various phases of public-school education, specialists working on school surveys, writers of articles in educational journals and of bulletins of the United States Bureau of Education which deal with home economics education. The fourth source, therefore, to which we turn is a series of eleven representative textbooks on education; home economics pamphlets of the Bureau of Education (Nos. 1, 2, 3, 4, 28, and 32; also *Education for the Home*, Part I); and the issues of the *Teachers College Record* for 1906-7, 1913, 1914, 1915, and 1918.

5. This type of material which we have set apart in a class by itself, is the material found in the four surveys of public-school systems that have dealt with home economics.

#### EVALUATION OF AIMS AND OUTCOMES: A FIRST STEP IN THE RECONSTRUCTION OF HOME ECONOMICS

It is a basic criticism of our whole educational scheme that purposes and functions have not been clearly stated. Analysis of other public-school courses—language, mathematics, science, social studies, etc.—reveals the same lack of clear definition of teaching goals. *Specific outcomes have rarely been enumerated.* This, we believe, is one of the fundamental causes for our apparent inability to set up a course of study and to present it to pupils in such a way that nearly all children can satisfactorily acquire the facts and skills and the powers of generalization which are fundamental to the teaching. In recent years there has been a marked tendency in such elementary-school subjects as spelling, arithmetic, history, and in such high-school courses as mathematics, to

investigate "minimum essentials" and to study the foundational elements of our curricula which should form the basis of teaching. Even in this connection purposes are rarely phrased in terms of the "learning" of the pupil. Like the vocabulary of the college instructor and writer, it is a "subject-matter" terminology. It deals with the "operations" of the subject. It goes no farther than to study the kinds of errors that students make. It does not deal primarily with the learning process itself. It is one of the central theses of the writers of this monograph, however, that in order that a clear statement of objectives and outcomes may be made and generally accepted by workers in home economics education, thinking must be expressed in language pertinently related to the psychology of the learner.

*Difference between "aims" and "outcomes."*—Now objectives (or aims) and outcomes are different, and yet both are important. Objectives state the general goal of teaching that should control the organization of the curriculum and the arrangement of materials and discussions; the particularized outcomes of teaching enumerate the types of information which have been acquired, the habits that have been formed, the extent to which powers of critical judgment, reasoning, analysis, and discrimination have been developed. The statement of objectives must be deliberately general in character. It pictures the big function and purpose of home economics education. The other deals with particulars, with details. The statement of function or general aim is the controlling principle. The enumeration of outcomes applies the principle by listing specific mental processes which the teacher is to have in mind in the work of each exercise of the course. The extent to which the latter have been developed should be checked up concretely by scientific measurement. The statement of general aim, again, should be a pedagogical application of clear thinking concerning the psychological and sociological bases of home economics education. The itemization of outcomes involves, on the other hand, the psychological problem of throwing into prominent relief the meanings or types of information to be indelibly fixed, and those fundamental types of muscular and intellectual habits the forming of which is a necessary groundwork for the more important outcomes of learning. The statements of the outcomes will include the perfection of machinery for the development of powers of critical judgment, abilities to think logically, to weigh issues, and to use information and ideas selectively.

*Home economics needs a scheme of educational thinking which is thoroughly psychological in character, and which at the same time will fit the*

*schoolroom needs of teacher and pupil.* Thinking about the purpose and functions of education should be done in terms of "learning."

PROBLEMS OF HOME ECONOMICS EDUCATION ARE FUNDAMENTALLY  
PROBLEMS OF "HOW CHILDREN LEARN"

The crux of the teaching problem is "learning." There is much evidence that we have lost sight of it in our school subjects, home economics included. We have discussed learning from the standpoint of the psychological laboratory and textbook. We have neglected to apply it. We have recently had valuable suggestions from the educational psychologists<sup>1</sup> concerning the methods of approach to this problem, but as yet there has been no detailed application in home economics. Even a cursory examination of the literature shows that workers in this field have been so concerned with *subject-matter* that they have failed to take into consideration the basic problems of *learning*. Furthermore, the general psychologist's contribution to the teaching of children has been very limited, remote, and indirect, especially with regard to a subject like home economics. The need is evident, therefore, for a statement of objectives and outcomes in our field which will reconcile these two points of view.

CURRENT POINTS OF VIEW CONCERNING THE FUNCTION AND PURPOSE OF  
HOME ECONOMICS

Our discussion is based upon tabulation of published aims. The statements of aim set down by the various groups of workers referred to in previous sections were tabulated. These were grouped in such a fashion that a sound interpretation could be made of the points of view represented by these statements. The tabulation was made in accordance with the four groups that we have previously mentioned.

Group A: When the phraseology left no doubt that the writer desired the setting up of habits of *skill*, of technique as an outcome of teaching, then it was tabulated in this group. Such phrases as "manual skill," "dexterity," "cooking and meal serving," "hand and machine sewing," "home-making skills," "keeping accounts," "habits of neatness," "habits of cleanliness," "habits of accuracy," "system in working" are illustrative of the statement which we interpreted as technique or habit-formation (both intellectual and manual).

<sup>1</sup> Judd, C. H., *Psychology of High School Subjects*. Boston: Ginn & Co., 1915.  
Freeman, F. N., *Psychology of the Common Branches*. Boston: Houghton Mifflin Co., 1917.

Group B: Whenever an aim clearly fell in the *information* group, it was checked there. Facts concerning foods, their source, manufacture, composition, selection, diet, etc.; house management, its care, and the use of labor-saving devices, the budget, division of labor, etc.; information about clothing, its selection, manufacture, its care; facts about the house, its construction, furnishing, sanitation, etc.

Group C: The third group, more vaguely stated intangible outcomes, included such phrases as "independence," "intellectual power," "initiative," "broad view of life," "self-reliance," "high sense of honesty," etc., combined with statements which clearly related to the *scientific* and *appreciational attitudes*.

Group D: Similarly with statements which could be interpreted as emphasizing the development of *judgment* and *problem-solving ability*. We so interpreted such expressions as "to get the pupil to use mental and physical powers definitely and intelligently in respect to problems of food and clothing"; "to develop a scientific attitude toward home problems"; "to train in the power to select and judge daily diet"; "to develop power in actual situations in the home"; etc.

#### I. THE POINT OF VIEW EXPRESSED IN PRINTED CITY COURSES OF STUDY

Out of several hundred city courses of study only sixty-seven contained statements of the program for home economics. Forty-two of these stated aims of instruction. Eighty-five specific aims were given. Table XXI summarizes the tabulation, while Figure 12 presents the results graphically.

TABLE XXI

NUMBER OF COURSES OF STUDY IN WHICH EACH AIM IS LISTED AS ONE OF THE AIMS OF INSTRUCTION

A. Technique and habit-formation . . . . .	28
B. Information . . . . .	19
C. General aims . . . . .	27
D. Formation of critical judgments . . . . .	11

Occasionally it was found that a supervisor would list one aim as the sole objective of instruction. For example, two supervisors set up knowledge as the sole aim; one, technique and habit-formation (phrased as "familiarity with tools"). No course of study set up the development of powers of judgment or problem-solving ability as the sole aim. Two state in varying language certain very general aims as the only goals to be kept in mind. Four systems record skill and information as all-sufficient, while *one-third of the entire number are centering their*

*attention upon skill, technique, or habit-formation.* One-fifth of the supervisors thought information was of primary value, and said nothing about skill. "Manual dexterity" was a favorite term used to describe skill and "knowledge of food principles" for the acquisition of information in the food field.

The analysis of city courses of study, therefore, reveals two striking facts: first, the very evident lack of clear thinking on the part of those designing our city-school courses of study concerning the real objectives of home economics; second, the great emphasis laid upon the acquisition

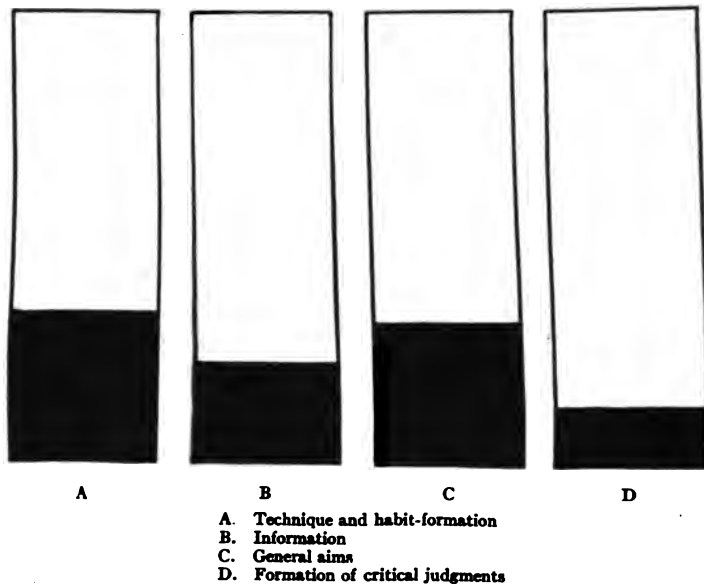


FIG. 12.—The extent to which various aims are emphasized in city courses of study.

of information and technique. There is little doubt that the leaders of home economics work in our cities are concerned more with fact and skill outcomes than they are with the development of generalized abilities in children. One-third of the aims were vaguely expressed and were couched always in phrases long current in statements of aims of school teaching. For example "to create a high ideal of home life and realize dignity of labor," "to strengthen the moral qualities of honesty, truthfulness, purposefulness and the like," "to develop not only the taste, but also the wisdom to choose the best instead of the cheap, the beautiful instead of the ugly."

## II. AIMS EXPRESSED BY WRITERS OF SCHOOL TEXTBOOKS IN HOME ECONOMICS

Twelve of the nineteen textbooks reported in chapters iii and iv contained statements covering the purposes of instruction. Table XXII

TABLE XXII

NUMBER OF TEXTBOOKS SPECIFICALLY STATING IN PREFACE OR ELSEWHERE THE PURPOSES OF INSTRUCTION IN HOME ECONOMICS

A. Technique and habit-formation . . . . .	3
B. Information . . . . .	10
C. General aims . . . . .	3
D. Formation of critical judgments . . . . .	3

summarizes our grouping of the aims and Figure 13 gives the data graphically.

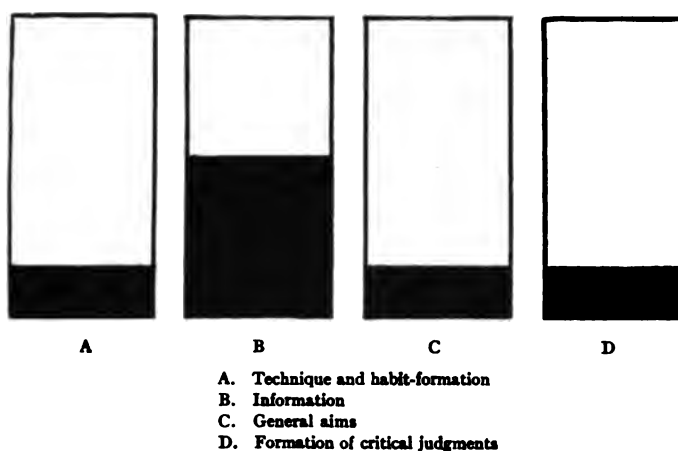


FIG. 13.—The extent to which various aims are emphasized in home economics textbooks.

This tabulation of aims confirms the conclusions reached in chapters ii and iv: writers of textbooks are concerned primarily with "information," with facts to be acquired, not immediately with material which will develop the students' mental powers of logical thinking. The organization of the textbooks is such as, rarely if ever, to arouse problem situations in the mind of the teacher who presents the material. The giving of information and the checking of the extent to which it is acquired—this is too often the goal held before public-school teachers of home economics by books which they are using.

III. STATEMENTS OF AIM FOUND IN PROFESSIONAL HOME ECONOMICS PUBLICATIONS: "THE PROCEEDINGS OF THE LAKE PLACID CONFERENCE ON HOME ECONOMICS" AND THE "JOURNAL OF HOME ECONOMICS"

It is in the proceedings of conferences and conventions that one can generally find the clearest statement of the real interests of leaders in an educational movement. It is a well-known fact that for the established subjects the content of the textbooks and courses of study is shaped by an accumulation of tradition which has been crystallized by publication agencies. The tabulation of aims from such sources leads to a conclusion far different from the interpretation of the verbal statements of the textbook writers before conventions. Their theoretical objectives are commonly diametrically opposite to the outcomes in which the study of their own material will eventuate.

We believe this point of view aids in understanding the material one finds in the *Proceedings of the Lake Placid Conference on Home Economics* and the *Journal of Home Economics*. At various times committees have reported on the "status of home economics in elementary and secondary schools" (for example, at the third annual meeting, 1901). From such reports one obtains the idea that leaders in the home economics field, although relatively untrained in the science of curriculum-making and the psychology of learning, are sincerely interested in the preparation of materials and in the formulation of teaching procedure which will lay a greater stress upon important generalized outcomes. One still finds, however, considerable emphasis on skill and information in the fifty-four aims that were stated specifically in the *Proceedings of the Lake Placid Conference on Home Economics*. The distribution is shown in Table XXIII and in Figure 14.

TABLE XXIII  
PROPORTION OF SPECIFIC AIMS CLASSIFIED IN FOUR GROUPS

	<i>Journal of Home Economics</i>	<i>Proceedings of Lake Placid Conference on Home Economics</i>
A. Technique and habit-formation . . . . .	$\frac{1}{5}$	$\frac{1}{5}$
B. Information . . . . .	$\frac{1}{5}$	$\frac{1}{5}$
C. General aims . . . . .	$\frac{2}{5}$	$\frac{2}{5}$
D. Formation of critical judgments . . . . .	$\frac{1}{5}$	$\frac{1}{5}$

But there is an equal emphasis upon the importance of developing general powers. One-fifth emphasize skill and habit-formation, information, and problem-solving ability. Two-fifths of the statements reveal an interest in the broader and more dynamic aspects of education. Such



statements as the following illustrate this interest: "to develop power to trace cause and effect"; "to develop good taste as regards form and color in furnishings and clothing"; "to obtain right attitude of mind toward the home"; "to establish a close connection between school and daily life"; "to lead to improvement in the condition of home life"; "to develop a sense of personal responsibility for the home"; "to emphasize the social aspect of education."

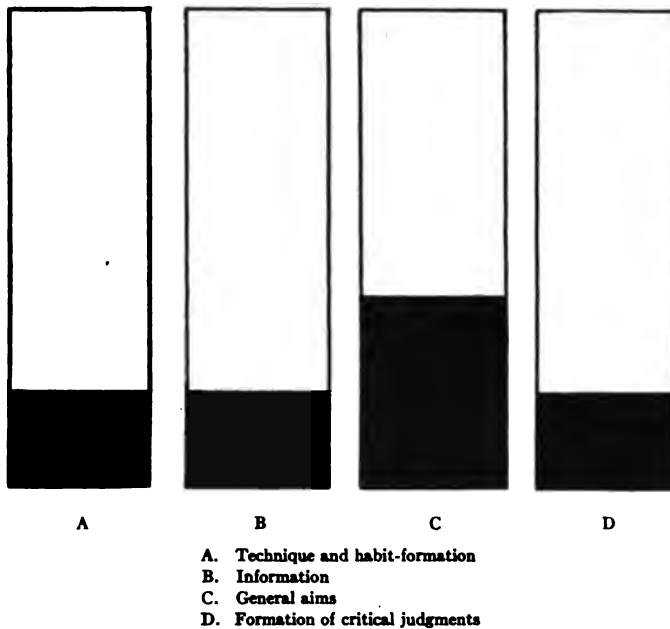


FIG. 14.—The extent to which various aims are emphasized in the *Journal of Home Economics* and in the *Proceedings of the Lake Placid Conference on Home Economics*.

Thus these "general" aims predominated. Culture was a highly lauded goal. "Sentiment," however, crept into the statement of the aims constantly, perhaps in part because of the lack of scientific analysis of the intellectual problem of stating educational aims clearly. Such phrases illustrate this, for example, as "it ennobles homely and practical duties of life by increasing respect for work; it ennobles life itself."

Often other more general aims were met. For example, there was presented the problem of the home-to-community relationships. Very frequently in the minds of these workers was the question of how best to train the child for good citizenship. "The fourth R"—right living

with only as much educational manipulation as was needed—was the point of view insisted upon by a few workers, and one which swayed the organization of home economics workers at least for a time. Thus the general point of view of some of the leaders shows that they have accepted the principle of “general” as opposed to “specific” education.

Many of these leaders did not write the textbooks and the courses of study; so these important statements of function and purpose have not eventuated in curriculum materials themselves. As has already been indicated, this is a fundamental weakness in our scheme. Statements of aim must be carried out through a proper organization and presentation of curriculum materials.

#### IV. POINT OF VIEW TYPIFIED BY WRITERS ON GENERAL EDUCATION

1. *Textbooks on education.*—A canvass of many books on education reveals discussions of home economics in the following: Inglis: *Principles of Secondary Education*; Charters: *Teaching the Common Branches*; Cooley: *Domestic Art in Woman's Education*; Johnston: *High School Education*; Hollister: *High School Administration*; Stout: *The High School*; Weeks: *The People's School*; Betts: *Class-Room Method and Management*; Davis: *High School Courses of Study*; Leake: *The Vocational Education of Girls and Women*; Leake: *The Means and Methods of Agricultural Education*.

The same lack of definiteness is found in the writings of educationists. We believe that even a more sweeping criticism ought to be made of the extent to which teachers of “education” have analyzed the fundamental problems of home economics education than has already been made of the leaders of home economics themselves. A careful study of the statements of these writers reveals no systematic program. Of twenty-seven definite statements which were given, only two laid stress upon the basic importance of setting courses of study so that general training could be given. The acquisition of information, the development of skills, and the securing of various intangible outcomes of instruction—these are the important objectives according to these writers. It is perfectly clear that educationists have not applied their general theories to the specific problems of home economics education. We have been unable to formulate from their statements a program of reconstruction. Note these statements: “On the one hand the subject holds place due to a kind of exercise, both muscular and mental, which they need when they engage in manual work.” “The faculty of observation is trained with lessons in tidiness”; “to apply intelligence and system to house-work”; “to learn how to cook and make hats.” Another author states

that the real aim is "to give certainty to guesswork, to learn how to apply science, and to develop ability to initiate." Only occasionally do any of these writers emphasize strongly the importance of the problem-solving phases of the work as is illustrated in Figure 15.

2. *Home economics circulars of Bureau of Education*.—The examination of the home economics circulars of the United States Bureau of Education merely confirms the conclusions arrived at from our analysis of textbooks and printed courses of study. Information to be given, so much skill to be sought after—these stand out again and again. Whenever aims are differentiated for elementary and secondary schools, habit-formation, technique, and skill predominate for the elementary course, and the acquiring of information for high-school instruction. For example, one gathers that machine sewing should be taught in the elementary schools because it will develop motor control and manipulation. The dignity of home-making is extolled with the development of generalized habits of "personal neatness" and "quiet orderliness." The same tendency to keep "cultural" outcomes to the forefront reveals itself in these home economics circulars as in the textbooks and other publications. All phases of information were to be emphasized, but the student was to be made completely conscious of the cultural values in home economics teaching.

3. *Teachers College Record*.—Analysis of the statements of the function of home economics as given in the *Teachers College Record* was also made and is included in the tabulation shown in Table XXIV and Figure 15.

TABLE XXIV

NUMBER OF TIMES THAT SPECIFIC TYPES OF AIMS ARE LISTED BY THE WRITERS  
ON GENERAL EDUCATION

A. Technique and habit-formation . . . . .	19
B. Information . . . . .	18
C. General aims . . . . .	21
D. Formation of critical judgments . . . . .	10

"General" and intangible aims play a large part. An emphasis upon the analytical, reasoning, and problem-solving functions was lacking. Writers here, as elsewhere, are primarily concerned with having children learn masses of home-making facts and acquire certain skills.

#### V. EVIDENCE FROM SURVEYS OF HOME ECONOMICS EDUCATION

1. *The Koos report*.—The most complete analysis of the scope, function, and objectives of home economics was made by Professor L. V. Koos, as secretary of the Commission on the Reorganization of the

Secondary School Units of the North Central Association of Colleges and Secondary Schools. His report, issued in 1917,<sup>1</sup> pictured the organization and administration of home economics and household art courses in sixty-three high schools in fourteen north central states. Half of the high schools were in Illinois, Indiana, and Wisconsin. Among other things Professor Koos collected from the teachers their statements of aim. Specific aims reported in his study involved for home economics:

(1) to develop skill in performing household activities; (2) to give information concerning home industries and concerning materials; (3) to teach

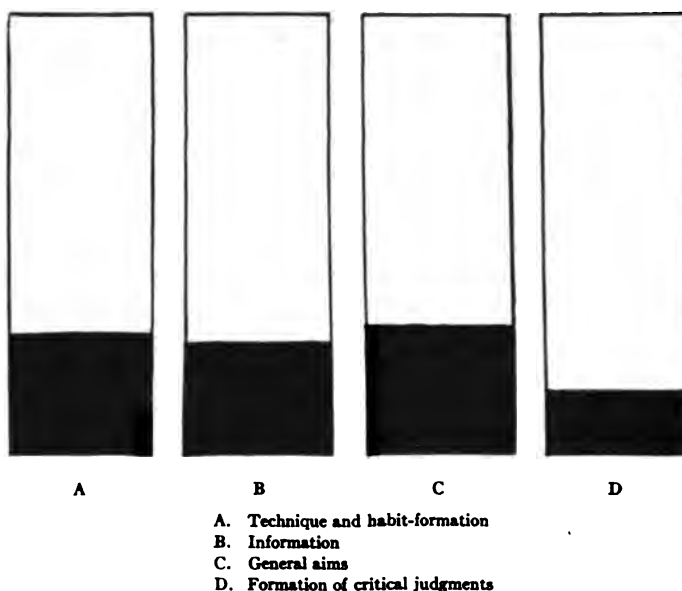


FIG. 15.—The extent to which various aims are emphasized by writers on general education.

principles of economy in terms of cost and expenditure of energy; (4) to create interest in home making; (5) to develop a scientific attitude toward household activities; (6) to create a desire to improve the living conditions of the family or of the community; (7) to show the relation of civic and economic problems to the home. Table XCIII [Table XXV in this monograph] contains the compilation of the responses to this request. If we bear in mind

<sup>1</sup> Koos, L. V., *The Administration of Secondary-School Units*. Supplementary Educational Monographs, Vol. I, No. 3. Chicago: University of Chicago Press, 1917.

that the total number of responses received was sixty-three, the fact that 38, 42, 39, and 34 teachers, respectively, concur in aims (1), (3), (4), and (6) as being most deserving of emphasis and that 22, 21, 19, and 22 additional

TABLE XXV  
NUMBER OF TEACHERS CONCURRING IN EACH OF THE VARIOUS  
AIMS IN HOME ECONOMICS

AIMS	NUMBER OF TEACHERS	
	Emphasizing	Giving Most Emphasis
1.....	22	38
2.....	47	11
3.....	21	42
4.....	19	39
5.....	33	22
6.....	22	34
7.....	30	6

teachers, respectively, emphasize them, signifies that these aims are considered valid by all or practically all teachers. There is rather general concurrence also in the remaining ones.

#### SPECIFIC AIMS IN HOUSEHOLD ART

The following specific aims in household art were listed in the questionnaire, and the teachers were requested to single-check those being emphasized and to double-check those receiving most emphasis in their classes: (1) to emphasize the informational side of the work (i.e., study of the loom, modern industrial conditions, economics, etc.); (2) to develop appreciation of beauty

TABLE XXVI  
NUMBER OF TEACHERS CONCURRING IN EACH OF THE VARIOUS  
AIMS IN HOUSEHOLD ART

AIMS	NUMBER OF TEACHERS	
	Emphasizing	Giving Most Emphasis
1.....	44	5
2.....	32	25
3.....	9	52

in material and construction; (3) to develop habits of skill and industry. Table XCIV [Table XXVI of this monograph] contains the compilation of responses to this request. The order of recognition given these aims is at once seen to be the reverse of that in which they have been here named.

His study confirms the two important conclusions derived from our other tabulations: first, there is very little agreement among teachers of home economics as to just what they are striving for in their instruction; secondly, they are emphasizing informational and technique outcomes.

2. *The contribution of the Cleveland survey.*—An important discussion of our problem is found in the analysis that was made by Alice C. Boughton of household art work in the Cleveland schools. The survey included the organization of courses, the preparation of the teachers, a study of the curriculum itself, of methods of teaching, and of purposes and functions of the course. Her comments confirm our conclusions point by point. In discussing the training, experience, and point of view of the teaching staff, she says:

They have little perspective with regard to their subject. If ever they do stop to question, they concern themselves with the hows rather than with the whats or whys of their work.

Note the emphasis upon technique, upon skill, upon being able to manipulate:

Every teacher should have a distinct end in mind toward the fulfillment of which she is bending all effort, and a clear idea of tools and materials required to bring her plans to fruition. Instead of this there is blankness and misunderstanding when questions as to the general function and purpose of household arts are raised. The following is a case in point.

She presents a case in which a teacher was giving a lesson on peanut cookies. The teacher was asked why she was teaching peanut cookies at this particular time. The reply was that they were in the course! Miss Boughton's survey points out that more time should have been spent by the teachers of home economics in trying to find what their subject ought definitely to contribute to the girl's education, what its aims were, and in how far results obtained corresponded to the end desired. From a study of a school survey, Figure 16 graphically illustrates that information is receiving the greatest emphasis; that there is also undue emphasis on technique and habit-formation as compared with the attention given to forming critical judgment.

Further light can be obtained upon the relation between the curriculum and objectives by reference to Miss Boughton's analysis of the way in which the Cleveland course of study was made. The old method of making a course of study was "to take from a well-stocked mind a neat

collection of facts which could be arranged in orderly and logical sequence and so given to the child." She illustrates by three lessons which can be found on page 27 of the report.

In such a fashion the whole course went on its deadly way, for in their desire to be logical the makers overlooked the psychological. Apparently they forgot that the way they themselves learned to measure, cook, and wash dishes, was by measuring, cooking, and washing dishes when there was a real reason for doing so, and some sort of a penalty in not doing the task well.

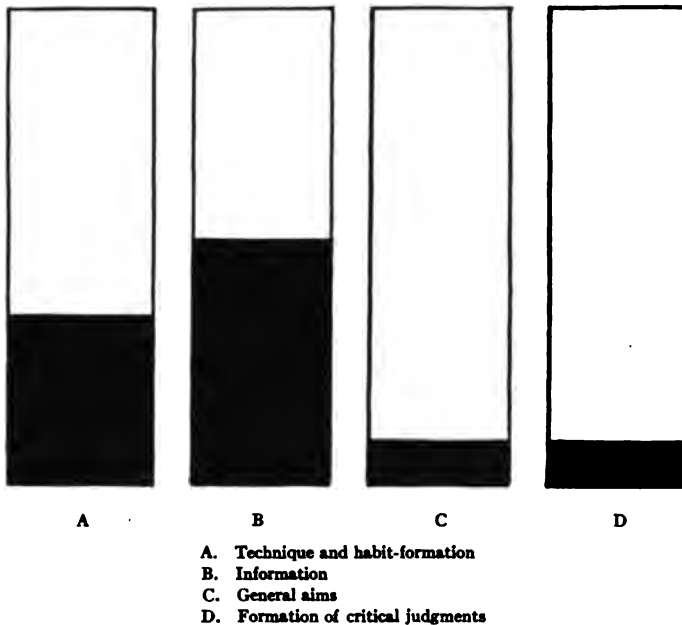


FIG. 16.—The extent to which various aims are emphasized in school surveys

She raises pertinent questions of emphasis:

Where shall the emphasis be put—on production or use? Shall all the girls be perfected in skilled ability to cook, sew, and sweep, or be given standards concerning cooking, sewing, sweeping, and the other technique of house-keeping? Which is more vital for them, to know how to make a good loaf of bread, or how to recognize good bread when they see it? The viewpoint of the present report is that general intelligent understanding is more important than detailed skill in accomplishment. The object of the work is to have the girls learn to know by doing.

## SUMMARY OF CURRENT STATEMENTS OF OBJECTIVES AND OUTCOMES

Several conclusions can be set forth as typical of the general situation. First, there is a very evident lack of clear thinking about the goals of instruction in home economics. This is shown by the vague terminology which is used in the literature, by the great variety of aims, and by the fact that in a large group of teachers there is very little predominance of one aim over another. It can also be shown by the few statements of scope of home economics that one can find. The Cleveland survey report is unique in that it has a program. It is a means of analysis and criticism. It is primarily educational in point of view.

The second outstanding conclusion from this discussion is that instruction in home economics is committed largely to routine—to dealing out information. The course is to be set so that children shall know how to cook and sew, and scores of hours are devoted to the routine of such things. Still greater is the waste, however, due to the striking emphasis upon the acquiring of facts and information. This report calls attention to the fact that this emphasis upon routine is not peculiar to the home economics field, that formalism pervades the teaching of mathematics, spelling, history, geography, arithmetic, even the scientific subjects of the high school.

In the third place, it is very evident that the program as set forth in the statement of aims is carried out in general in the textbook.



## CHAPTER VI

### NEW PURPOSES FOR TEACHING: TRAINING POWERS OF THINKING AND ENJOYMENT

*Need for unifying principles in the school subjects.*—Improvement of the teaching of the school subjects waits upon the discovery of great unifying principles in each one. For example, take mathematics. We have seen stagnation in the conduct of mathematical instruction in the public schools of this country because of the inability of the mathematical group to find a great central purpose for the course and to organize curriculum materials about it which will contribute to the fulfilment of the objective. "Science," in its public-school form, has failed to put new mental virus into the curriculum primarily because the development of subject-matter and its presentation have been unaccompanied by a thoroughgoing statement of unifying principles. The mere introduction of new subject-matter has been insufficient just as it has been at various times in the history of our mathematics curriculum. The same fate awaits the movement to build a public-school curriculum around the social studies unless the basic laws and procedure in thinking and in enjoying are discovered and linked up effectively with a curriculum and teaching procedure which is thoroughly in harmony with it.

It is possible to show in mathematics (and it will be possible to show in the physical, biological, or social sciences) that there is one fundamental underlying principle of intellectual learning: the ability to see relationships. The primary function of all school instruction on the intellectual side should be the training of children in the use of those higher mental processes which are primarily analytical, discriminatory, differentiating, reasoning in character, and to which all other processes should be subordinated. Not the acquisition of facts in mathematics, in the social studies, in science, in language, not the development of hand skill, carried to such a point as to eventuate in "trade" efficiency, but rather a goal should be held before us of so organizing all our curriculum materials and our class exercises that children shall be made effective thinkers. That they shall be able to draw correct inferences from tangled situations, shall be critical of their tendencies to act upon first impulses, shall be able to draw sound conclusions—these are basic

purposes. This, along the *intellectual* side, we believe to be a fundamental principle of curriculum-making and to be a necessary first step in the statement of a sound scheme of objectives in education.

We have deliberately illustrated our discussion of the central principles of teaching from school subjects other than home economics. The home economics group should be much concerned in working out the future of public-school instruction in such a subject in collaboration with workers in the other subjects. It will be seen that *the primary objective of the intellectual training* that we give children in our school subjects *is a scientific attitude*. This in turn can be developed only by constructing our course of study around a core of problem-solving situations. The development of a grasp of scientific law—this is the principal *intellectual* goal of instruction. All emphasis upon the acquisition of socially worth-while facts should be subordinated to it—in fact, curriculum materials of that sort should be selected primarily in terms of the degree to which they contribute to it. Similarly, our education must not be centered fundamentally upon the development of hand technique, of muscular co-ordination. True enough, a considerable amount of training must be devoted to the development of a sufficient degree of skill in certain commonly used processes so that our children will be socially equipped to meet home-making situations, but the preponderance of our time and energy should be directed at these other more important objectives.

*Home economics: a great applied science of the public-school curriculum.*—Certainly for city schools home economics provides the content for the application of scientific principles more thoroughly than does any other subject of study. It is the belief of many of us that the whole elementary and secondary curriculum needs revamping in terms of the degree to which, intellectually at least, it can contribute to the development of the scientific attitude. The pure sciences, introduced lower in the school curriculum, have failed to do this. The applied sciences give far greater promise of being the vehicle by which this outcome can be obtained. On the intellectual side, therefore, it is the point of view of the writers of this monograph that the great opportunity of home economics is to recognize its function as the central applied science of the curriculum. In the fields of food and textiles the basic principles of chemistry can be made clear if the proper goal is held in mind and if the course of study is framed in terms of it. Certainly elementary but fundamental laws of physics find their applications in the study of food. A few important principles of bacteriology

can be developed through the study of sanitation, hygiene, and food, and should be regarded as required essentials of scientific training in the elementary schools. In the same fashion a completely rounded-out applied science in home economics will show applications of biology and psychology in the very important fields of hygiene and child psychology. The field of household art can justify its place in this general home economics curriculum in the degree to which it turns right-about-face from emphasizing the acquisition of fact and the development of skill, and lays an emphasis upon the development of standards of judgment and of the basic principles of the science of economics through the study of consumers' problems, through a proper acquaintance with, and appreciation of, the budget, problems of buying, etc. Thus, on the intellectual side, our program for the remaking of the objectives of home economics education emphasizes the generalized outcomes, and would set up in clear relief home economics as the great applied science of the curriculum. Only for the rural districts would we grant that any other definite body of subject-matter—agriculture—can give the same opportunity to carry over into effective learning the basic principles of scientific law. To accept this program, home economics workers generally will be forced to repudiate the situation which our report shows to be prevalent. We urge a complete recasting of the whole point of view.

*Abilities of enjoyment and appreciation.*—We are thoroughly critical of the failure of public education today to develop the important attitudes and qualities of "enjoyment." It is clear that home economics has failed, with the other subjects, to fulfil this important function. We would set up as the second and equally important objective of the course the development of ability to enjoy "good" things—aesthetically right arrangement of color elements, line arrangement, etc.

*No psychology of appreciation.*—Any group of workers dealing with this problem is today practically inhibited from proposing a complete program through which instruction may eventuate in these aesthetic outcomes. We have no psychology of appreciation. Even in the field of art, teachers, practical workers in the field, and the psychologists have so far failed to contribute singly, or in co-operation, a definite concrete analysis of these intangible mental processes, and of the methods by which they may be developed. This will include a recognition of the important place in this field of the contribution of *intellectual elements*. For example, one can show that the *ability to appreciate is contributed* to in a very marked way by the proper introduction of new ideas. There

are many practical illustrations of the statement also that *ability to enjoy and appreciate* in music, literature, art, or the drama *is contributed to strongly by habituation*. The illustration is commonly met of persons who have learned to enjoy orchestral symphonies by training themselves with victrola records and through informing themselves of the characteristics of the symphonies.

Thus we would set in a new perspective the great central purpose of home economics education. In doing so the basic question is raised: Where shall emphasis be placed—on perfection of ability to cook and sew, or upon the development of standards of critical judgment concerning food, diet, selection of dress, distribution of the income, house planning, arrangement of furnishings, development of ideas and habits of good arrangement? It is as the Cleveland survey says: "Which is more vital—to know how to make a good loaf of bread, or to recognize a good loaf of bread when they see it?" Certainly we will agree that intelligent understanding is indeed far more important than the perfection of skill, either manual or intellectual.

#### THE OUTCOMES OF INSTRUCTION: NEED FOR A SYSTEMATIC PROGRAM

No statement of goals will eventuate in thorough-going outcomes except through specific enumeration of those outcomes themselves. Consider the situation in any of the school subjects. One very real reason why we have not been able to teach children to handle language correctly is that we rarely, if ever, have stated concretely the specific mental achievements which we hope to have our children attain. For teaching to be effective, classroom processes must be aimed, not only at general goals, but also at specific outcomes. The spelling of particular words shall be automatized 100 per cent. Certain skills in the four fundamentals of arithmetic shall be absolutely mastered. The required skill to handle these operations in mathematics or in science, to use these language forms in a foreign language or in the vernacular, will be developed only when teachers enumerate definitely the specific mental outcomes in which their instruction is to result.

So it is with instruction in home economics. The specific description of particular outcomes from teaching will not only aid the teachers in framing their classroom work so as to bring about the desired result, but will also make our whole group very critical of much of the material itself. An important influence upon the elimination of waste material from the present-day curriculum in home economics will be revealed by this movement for specific delimitation of outcomes.

Outcomes must be stated in psychological terms. It must not be forgotten, however, that if the statement is to affect teaching, it must be phrased in terms of "learning." We have already referred to the striking need for the development of a psychology of home economics. We have suggested a fourfold scheme of thinking. This scheme includes the important categories of (1) the fixing of meanings or the acquisition of socially worth-while facts; (2) the development of an optimum (not a maximum or "trade") amount of hand technique and of intellectual habit-formation; (3) the perfection of abilities of critical judgment; and (4) the development of the power to enjoy and appreciate things that have been found to be aesthetically right.

Some such practical scheme of thinking about the goals of instruction is necessary for definite outcomes to result from teaching. Good teaching will ensue only through clear thinking concerning how children learn. Attention should be given to the importance of the development of an applied psychology in our field. We believe that the chaotic situation described in chapters i and iii has developed primarily because of the lack of clear thinking about both the purposes and the methods of instruction. Pupils will have a clear grasp of the subject-matter only when we have enough knowledge of how children learn to utilize it in teaching.

Teachers generally are recognizing in these days that the fundamental pedagogical need is to clear up thinking about the mental processes which are involved in the learning of school subjects. How are clear ideas formed in home economics? What is an idea from the standpoint of our subject-matter? What different types of mental processes are involved in forming powers of critical judgment that are not involved in acquiring information? Furthermore, a statement of such a psychological sort needs to be detailed and immediately related to particular teaching problems in home economics. Not with general laws of attention, memory, imagination, etc., are we concerned—not how to memorize in general is the aim—but rather how to master effectively and economically specific home economics facts that are socially worth while, facts concerning the production of materials in textiles; the testing and adulteration of fibers; the weave construction of principal fabrics; facts concerning the nutritive value of food most commonly used. From the standpoint of economical and effective learning we are very much concerned with best methods of teaching a clear grasp of foundation recipes, of basic patterns in constructive work in sewing, the fixing of important principles of construction. How best can the teacher autom-

atize those important mental skills in which the process of wise selection and judgment should become automatic—for example, in the buying of food and textiles, in the harmonious arrangement of proper colors, in the combination of proper food in a well-planned diet? These are illustrative of the psychological questions which should be considered.

The perfection of abilities of critical judgment has been set up as an all-controlling aim for consideration. The teacher's thinking concerning such goals needs to be aided by clear statements of the mental processes which contribute to powers of judgment. How can the subject-matter of home economics, for example, be arranged so as to contribute this fundamental ability of analytical thinking? By what means can the curriculum and classroom-instruction be organized so as to have it eventuate in the scientific attitude?

## CHAPTER VII

### MEASURING THE RESULTS OF TEACHING IN TEXTILES, DRESS DESIGN, SEWING, AND HOUSE PLANNING

There are two effective methods by which a sound scheme of instruction in home economics can be organized. The first necessitates the clear statement of goals of instruction. This we have canvassed in detail in chapter v and incidentally in other sections of this report. The second is the design and use of standardized tests to measure the results of instruction. In the past few years educational leaders have rapidly taken over the use of scientific technique. The very essence of their systematic methods has been the design of instruments by which traits and activities can be measured.

Even though the movement is still very young, more than one hundred standardized tests are available in the various school subjects. To measure the results of teaching arithmetic, it is possible to make use of a number of rather well-standardized tests for formal abilities, such as the *Courtis Standard Research Tests, Series B*, the *Woody Arithmetic Scales*, the *Cleveland Survey Arithmetic Tests*, the *Monroe Diagnostic Tests*, and others. The ability of children to reason with arithmetic materials can also be tested by such tests as the *Stone Reasoning Test*, the *Monroe Standardized Reasoning Test*, or the *Buckingham Reasoning Tests*. In spelling, a teacher can construct her daily tests from the graded lists in the *Ayres Spelling Scale* or the *Iowa Dictation and Spelling Tests*. Examinations which are constructed in this way are themselves "standardized" in that the difficulty of each of the words which is selected is known. Similarly, it is possible to measure a pupil's rate of reading with different kinds of material. Important achievements or defects in oral reading ability can be checked up by *Gray's Oral Reading Test*. A pupil's understanding of sentences and his visual vocabulary can be determined definitely by the two Thorndike tests—*Thorndike's Scale Alpha 2 for Measuring the Understanding of Sentences* and *Thorndike's Reading Scale A 2 and B: Word Knowledge or Visual Vocabulary*. From the unusual amount of material that is being developed at the present time by various investigators, it is a safe prediction that within the next few years it will be possible to find varieties of standardized reading materials which will test adequately the ability

of a pupil: (1) to read and analyze a problem; (2) to read and select essential ideas; or (3) to read and organize material.

*The measuring movement is permanent.*—We could continue with the other school subjects. Suffice it to say that, rather completely for the elementary-school subjects and in part for those of the high school, this work of constructing standardized test material has gone on. Even now it is having a decided effect on the established subjects of the elementary and secondary curriculum. The measuring movement is beyond the realm of theory and prophecy. Measurement is becoming one of the definitely accepted tools of a thoroughly equipped school administrator. Teachers are being trained in the handling of measuring instruments and in the utilization of results.

*Few tests available in home economics.*—There have been no published tests for home economics to the present time.<sup>1</sup> We report in this chapter and the next the preliminary investigations of this matter that have been set in motion by the present writers. These preliminary tests are reported at this time because the design and use of tests is the center of a complete program for the reconstruction of home economics work in the public schools. There is no desire at present to report these as standardized tests. Extensive activity, however, should be stimulated among home economics leaders and teachers in the construction and use of such measuring devices. We have proceeded far enough at the present time to recognize clearly the importance of this work. There can now be seen the relation of standardized tests in home economics to the design of a sound course of study, how such tests contribute to the improvement of classroom teaching, and their close connection with problems of learning. A necessary first step in the development of educational measurement is the detailed analysis of the mental processes which are utilized in learning the subject-matter of the field.

#### FOUR TYPES OF STANDARDIZED TESTS IN HOME ECONOMICS

Concretely, in home economics there will be four types of standardized tests—one to fit each of the four main classes of instructional outcomes.

First, we shall have a test, or a series of tests, for the acquisition of information, a test for the extent to which children have mastered the

<sup>1</sup> After this section of the monograph was completed Dr. Murdoch's interesting text came from the press: Murdoch, Katherine, *The Measurement of Certain Elements of Hand Sewing. Teachers College Contributions to Education, No. 103.* New York: Teachers College, Columbia University, 1919.



socially worth-while facts which have been set up through the curriculum.

Secondly, since the development of manual and intellectual skills is one of the established goals of our teaching, there will be need for scales and tests to measure the extent to which children have mastered technique. Scales for skill in sewing, for example, will be utilized by home economics teachers in the same effective way that handwriting scales are now being used by hundreds of teachers.

Thirdly, but most important of all, we shall test the ability of children to "think"—*to reason*—when dealing with home economics material. We are primarily concerned with reasoning tests—measures of their powers of critical judgment. Certainly no preliminary investigation should overlook this phase of the matter.

Fourthly, the enjoyment outcomes have been referred to in this report through a discussion of the development of appreciation and tastes. The scheme of measuring will be incomplete unless the next few years of research result in definite contributions in the field of testing aesthetic abilities.<sup>1</sup> There are already concrete evidences in published literature of art which show the possibility of application in house planning, decoration, and costume design. *Thus we have the four-fold scheme of testing—acquisition of information, development of manual and mental skills, powers of judgment, and abilities of enjoyment and appreciation.*

#### TESTS FOR REASONING ABILITY IN TEXTILES, DRESS DESIGN, SEWING, AND HOUSE PLANNING

Two instructors in the University of Chicago<sup>2</sup> during the past year have been working on the problem of developing reasoning and information tests in the field of household art. The work is still in the experimental stage, but sufficient progress has been made so that a preliminary statement can be given at this time. In this report attention has been focused constantly on the importance of developing power of critical judgment. Therefore, in setting forth the possibility of developing educational measurements in home economics, the design of instruments for testing reasoning outcomes is first discussed. Parts of the reasoning tests with percentages of pupils failing and score values follow.

<sup>1</sup> Whitford, W. G., "Empirical Study of Pupil-Ability in Public-School Art Courses," Part I, *Elementary School Journal*, XX (September, 1919), 33-46.

<sup>2</sup> Leona F. Bowman and Mabel B. Trilling.

## REASONING AND CONTENT TESTS

## SERIES A

I. If you were testing upholstering cretonnes, check in the following list the best test for determining fastness of color:

1. Rub the fabric with a piece of moist white cloth.
2. Obtain a sample of the material and subject it to the ordinary rubbing and soaping which must be used in cleansing such material.
3. Expose a sample for a number of days to the sunlight, having half of it covered with something which will exclude light.

Percentage of pupils failing..... 46

Score value..... 48\*

\*Method of determining score values is discussed on pages 94-97.

II. To test woolen material for shoddy, check the best test to use from the following list:

1. Examine the sample under the microscope to see if there are fibers of many colors.
2. Burn samples of both warp and woof threads, noticing the odor and the type of residue.
3. Boil the sample for a few minutes to remove sizing.

Percentage of pupils failing..... 88

Score value..... 69

III. To test a material for true and artificial silk, check the test in the following list which would be best to use:

1. The burning test.
2. The microscopic test.
3. The breaking test.

Percentage of pupils failing..... 56

Score value..... 52

## SERIES B

Directions: This is a test of reasoning ability and judgment. Some of the conclusions presented in the following exercises are good; others are bad. Make a cross after the best answer or conclusion to each.

I. If you were asked to select a suitable house dress for a short, stout woman you should select:

1. A Scotch plaid gingham.
2. A striped black and white silk.
3. A dark worsted to be trimmed in bands of black silk braid.
4. A dark blue linen with white collar and cuffs.

Percentage of pupils failing..... 30

Score value..... 40

II. If you had plenty of money with which to buy yourself a school dress for next winter, you should buy:

1. A velvet dress.
2. A serge dress.
3. A broadcloth dress.
4. A taffeta silk dress.

Percentage of pupils failing..... 30  
Score value..... 40

IV. If you are to design a party dress for a very tall girl of about your age, you should use:

1. Striped material made with panel drapes.
2. Plain material made with ruffles, shirring, or horizontal tucks.
3. Embroidered material made with a wide girdle and plaited skirt.

Percentage of pupils failing..... 30  
Score value..... 40

VI. If you find that the skirt pattern which you have bought is two inches too long, you should:

1. Cut two inches off at the bottom of the pattern.
2. Cut two inches off at the top of the pattern.
3. Cut one inch off at the top and one inch off at the bottom.
4. Lay a one-inch tuck crosswise of the pattern about 10 inches down from the top.

Percentage of pupils failing..... 30  
Score value..... 40

VII. Suppose you have a good-fitting sleeve pattern, but the sleeve is not full enough for the prevailing fashion. You should add fulness by:

1. Adding an inch or two to each side of the pattern.
2. By laying a lengthwise fold in the material before placing pattern and cutting material, and later correcting the upper curve of sleeve in the material.
3. By cutting the pattern apart lengthwise on the upper side inserting a piece and correcting the curve before cutting material.

Percentage of pupils failing..... 61  
Score value..... 56

VIII. If wrinkles in the waist which you are making run from the neck at the shoulder seam slanting to the armseye, you should:

1. Take up the shoulder seam at the point of the shoulder.
2. Take up the shoulder seam at the neck.
3. Take out some fulness under the arm.

Percentage of pupils failing..... 81  
Score value..... 67

IX. Suppose you have \$6.00 with which to buy material for your graduating dress. You wish this dress to be serviceable and appropriate for

wear during the summer for the theater, receptions, dances, dinners, and club. You should select:

1. White cashmere 42 inches wide at \$1.50 per yard.
2. Dimity 32 inches wide at \$0.50 per yard.
3. White galatea 32 inches wide at \$0.40 per yard.
4. White lawn 27 inches wide at \$0.50 per yard.
5. White organdie 36 inches wide at \$1.50 per yard.
6. Persian lawn 36 inches wide at \$0.75 per yard.
7. Swiss 32 inches wide at \$1.00 per yard.
8. Crêpe de Chine 40 inches wide at \$1.50 per yard.

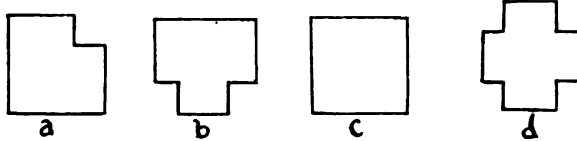
Percentage of pupils failing..... 24  
 Score value..... 36

#### SERIES C

Directions:

This is a test of reasoning ability and judgment. Some of the conclusions presented in the following exercises are good; others are bad. Make a cross after the best answer or conclusion to each.

- I. The areas of the following floor-plans are the same. The one which is most economical to use in building a small house is:



- a) The L floor-plan; b) The T floor-plan; c) The square floor-plan; d) The cross floor-plan.

Percentage of pupils failing..... 36  
 Score value..... 43

V. I wish to increase the apparent height of this room as much as possible, therefore:

1. The picture-molding should be on a line with the upper casing of doors; the wall-paper plain; curtains hanging straight; mission furniture, which emphasizes horizontal lines.
2. Pattern in paper should suggest horizontal lines; molding on line with upper casing of windows; furniture of Hepplewhite design; hangings draped back, and in color, harmonious with the background of the wall-paper.
3. Wall-paper should be striped; picture-molding at angle of wall and ceiling; panel pictures; mission furniture; hangings in straight folds.

Percentage of pupils failing..... 60  
 Score value..... 54

*Scope of the reasoning tests.*—Reasoning tests have been experimented with by the present writers in three fields of subject-matter: textiles, dress design and sewing, house planning and furnishing. These tests have been given in nine high schools, in and about Chicago, to 148 pupils. It is obvious that no test can be standardized on the basis of so small a number as 148 pupils. This material is reported as illustrative of the technique of constructing tests for reasoning in home economics. Through the experimentation much has been learned about the design of those tests, so that the redesign which is in progress for the purpose of standardization will be very much more effective. These tests were not timed tests. A gross time limit was set for each series which permitted all who had average ability to finish the tests.

*How reasoning tests in home economics can be used.*—School principals and superintendents as well as teachers should be concerned with checking up the degree to which instruction has emphasized thought processes rather than information and technique. They can do this effectively by the use of reasoning tests. One of the important functions of a reasoning test is, therefore, to measure objectively the work of various pupils, to compare results, grade with grade and teacher with teacher.

This is not the most important administrative use, however, for such tests, nor the one which after all conduces in the most important way to effective class instruction. Teachers can test pupils with reasoning tests, such as we have described, to check up the degree to which they are properly classified within classes. Furthermore, the results of such testing tell the teacher very clearly, indeed, whether certain pupils are mastering essential principles—whether they are grasping central ideas. The teacher becomes critical of her own judgment; she raises serious questions whether children's powers of judgment are really being developed. Thus tests designed in accordance with sound principles will supply school people with accurate means of differentiating between the degrees to which instruction has emphasized one or another outcome. Later in this chapter we shall discuss the fundamental criterion for the design of reasoning tests.

*Possibility of measuring growth of children.*—Not only will the result of being able to differentiate between the reasoning abilities of different children be obtained, but an important method of determining the degree to which children have grown in ability will also be supplied.

### TESTS FOR INFORMATION IN TEXTILES, DRESS DESIGN, SEWING, AND HOUSE PLANNING

A second important recognized outcome of instruction is the acquisition of socially worth-while facts. Stress should be laid upon the phrase "socially worth-while." In home economics, as in other subjects, we need many "social" studies, the conduct of which will lead to the determination of factual material which can be shown to have definite social value. The designers of information tests in other school subjects have, in the main, constructed tests to fit what is prevalent in the course of study, and not what can be shown to be socially worth while. For example, in history tests are constructed to fit the content of twenty-three commonly used textbooks. In geography the same procedure has been followed. Even in the construction of a recent spelling scale the selection of words has been based upon their frequency of use in new spelling books. The reader should understand clearly, therefore, that *the practice of selecting the content of a test so as to fit prevalent usage is but a transition measure—a makeshift. The urgent need is for establishment of minimum essentials by means of scientific procedure.*

At present, however, the only justifiable method of determining minimum essentials until such social studies have been made is through a comparative study of the textbooks and printed courses of study in use in the schools. The subject-matter which is common may be considered essentially worth while, from the various authors' points of view. This method was followed in designing our information tests which are illustrated in Exercises I and II.

### CONTENT TEST—TEXTILES

#### EXERCISE I

##### Directions:

Check with the initial letters (*c* for cotton, *f* for flax, *s* for silk, and *w* for wool) those places in the following list where one or more of these textile fibers are produced.

For example, silk, wool, and flax are produced in France. Therefore, France—*s, w, f*.

Begin with this column:

	Percentage of Pupils Failing		Percentage of Pupils Failing
1. Belgium.....	50	9. Georgia.....	26
2. Minnesota.....	76	10. India.....	2
3. Scotland.....	30	11. Thibet.....	76
4. North Carolina.....	36	12. Italy.....	13
5. Australia.....	54	13. Sea Islands.....	69
6. Egypt.....	38	14. China.....	15
7. Ireland.....	44	15. Colorado.....	55
8. Japan.....	8		

## EXERCISE II

## Directions:

Below is a list of terms used in the manufacture of textiles. Give a particular example of each as: Reeling—silk.

	Percentage of Pupils Failing		Percentage of Pupils Failing
1. Calendering.....	62	7. Felting.....	44
2. Hackling.....	63	8. Retting.....	69
3. Ginning.....	12	9. Degumming.....	55
4. Weighting.....	62	10. Scutching.....	76
5. Throwing.....	75	11. Baling.....	22
6. Breaking.....	70	12. Scouring.....	44

## Directions:

Write the initial letter after each fabric which is manufactured from cotton; *w* after each fabric from wool; *s* after each from silk. If a fabric is manufactured from two or more of the textile fibers, place two or more initial letters after the name of each.

Example: Moiré from both silk and cotton. Therefore, it should appear moiré—*c, s*.

	Percentage of Pupils Failing		Percentage of Pupils Failing
1. Taffeta.....	16	14. Chambray.....	26
2. Batiste.....	36	15. Swiss.....	29
3. Chiffon.....	45	16. Georgette crêpe.....	46
4. Mohair.....	94	17. Serge.....	16
5. Calico.....	13	18. Plush.....	38
6. Broadcloth.....	29	19. Velveteen.....	84
7. Huckaback.....	19	20. Crash.....	36
8. Organdie.....	33	21. Sateen.....	61
9. Silkaline.....	87	22. Flaxon.....	69
10. Madras.....	57	23. Voile.....	17
11. Gingham.....	13	24. Crêpe de Chine.....	39
12. Panne velvet.....	64	25. Khaki.....	42
13. Muslin.....	15		

The chief purpose of these preliminary tests is to develop a critical attitude toward the curriculum. Suppose we found, as in the case of some of the tests that are reported in Exercise I, page 82, that 50 per cent of the pupils failed to remember what fibers are produced in Belgium, that 76 per cent failed with Minnesota, but that only 8 per cent failed with Japan, and 2 per cent with India. What will one conclude from such findings? Are these percentages of failure, as in the case of reasoning tests, to be regarded as adequate measures of the ability

of pupils to study and remember facts concerning textile fibers? Our answer is "No," for two reasons: First, some of these facts are taught in other school subjects, especially geography. (Note the small percentage of failure in the case of Japan and India.) Secondly, the "teaching emphasis" controls the percentages of failure. For example, in some of the classes which we tested, the small percentages of failure found for retention of certain facts were due clearly to the greater emphasis that had been laid on these facts by the teacher. The degree to which a teacher emphasizes certain subjects or phases of a subject, therefore, is reflected in the information test. Questions of this sort are raised because it should be made clear that information tests are not adequate measures of pupils' ability, and the design and construction of such tests cannot rest upon the same principles as are used in reasoning tests.

*A suggested point of view on the design of information tests in home economics.*—The first task is the construction of a sound course of study. This having been done, each phase of the subject-matter will be represented by a statement of minimum essentials, of common ideas, which children should automatize and carry through their life-work. For example, there are certain fundamental principles in design, certain minimum standards for materials, certain foundational recipes which every woman in the home should know. Facts of this sort in all subjects of the curriculum can be determined, and, we believe, tested for periodically throughout the school career of the child, by complete information tests. This would mean, therefore, that there should be information tests covering each item of these minimum essentials which should be used at the end of a term or the end of a school year. These tests cannot be mere samples of the facts contained in the course. This would be one type of information test. They should be thought of rather as "all-inclusive" tests and should include all of the facts within a subject that the school sets up as minimum essentials.

Accompanying these minimum-essential information tests, very general use should be made of tests which can be constructed and scored economically, and which will canvass the details of the work done week by week, and month by month, throughout the school year. "Completion" and "Checking" tests will be referred to later as two basic types which are effective and economical. It is clear that no minimum-essentials course can be effectively organized which is not supported by a very considerable amount of detailed subject-matter. It is these details, subordinated as they should be to great central



principles, that should be tested by information tests given at short intervals, perhaps once, twice, or three times a month throughout the year.

Thus it appears that we shall have two distinctly different kinds of information tests in general use when minimum essentials have been agreed upon in home economics. In the meantime, however, there is urgent need of stimulating discussion of the testing movement itself. For that reason tentative tests should be constructed today which are based upon the best judgment we can get as to which facts (of those included in prevalent courses of study) should be automatized. This point of view is illustrated by tests reported herewith.

*Two types of information tests: (1) the completion test; (2) the checking test.*—Two types of information tests have been designed by those who have used the results of the psychological experimentation of recent years.

1. The completion test. This is illustrated by Exercise III. The completion-test scheme has been used for a generation since Ebbinghaus first hit upon it as an effective method of testing memorizing. In recent years many educational tests in language, history, geography, etc., have utilized this method. To use it, one sets up a series of sentences, omitting critical cue words. The ability to supply the missing information is regarded as a measure of two things: (1) the degree to which the child has the information demanded, and (2), to some extent, his intelligence. Scores of language completion tests, for example, correlate very highly indeed with other valuable kinds of intelligence material. Hence, in using an information test of the completion type, one never knows to what extent the score represents definite grasp of information or the amount contributed by intelligence.

2. The checking test. For this reason many workers prefer the checking method. One form of this method is illustrated by Exercise IV. It consists of a series of statements, some of which are true and some of which are false. The student is asked to read the statements, deciding whether each one is true or false and to underline the appropriate word.

## COMPLETION TEST

## EXERCISE III

## Directions:

Complete the sentences below by using one or more of the following list: cotton, silk, wool, linen, hemp, ramie, artificial silk.

	Percentage of Pupils Failing
1. Under the microscope many serrations can be seen on the fibers of.....	62
2. The fiber which has the appearance of a flat, twisted piece of ribbon is.....	73
3. When applying the burning test the fibers which leave a large amount of residue and have the odor of burning feathers are.....	29
4. When applying the burning test the fibers which have a white ash and the odor of burning paper or wood are....	19
5. The strongest of the vegetable textile fibers is.....	98
6. Under the microscope some fibers look like straight glass rods. These are.....	65
7. The strongest animal fiber is.....	79
8. Under the microscope certain fibers look as if they are jointed, or have nodes.....	69

## CHECKING TEST

## EXERCISE IV

## Directions:

The statements below are either *true* or *false*. If the statement is *true*, underline the word "true" which follows the statement. If the statement is *false*, underline the word "false." Example: Wool is stronger than cotton (true, false).

	Percentage of Pupils Failing
1. Broadcloth is more serviceable for general wear than serge..... (true, false)	30
2. Silk fiber is stronger than wool..... (true, false)	44
3. Artificial silk has higher luster than true silk... (true, false)	57
6. The mercerization of cotton weakens the fiber very much..... (true, false)	57
9. The wool thread should be stronger than the warp thread..... (true, false)	37
12. Artificial silk is not serviceable material to use in garments which require much laundering.. (true, false)	76
13. Serge is a worsted cloth of twill weave construction..... (true, false)	33
17. Woolen under garments should be subjected to rubbing, soaping, and boiling for the purpose of cleansing such garments..... (true, false)	44
18. Silk should never be pressed with a hot iron... (true, false)	15
21. Broadcloth has no right nor wrong side..... (true, false)	50
22. Dotted swiss has a right and wrong side..... (true, false)	26

*Method of scoring such tests.*—The reader will note that a score obtained by such a method may be very much complicated by guessing

or "chance." If a "true or false" test is constructed properly, then a student who has never studied the subject at all can by guessing answer 50 per cent of the questions correctly. Hence, in order to offset this weakness in scoring, a scheme has to be devised by which the guesser will receive a zero score. One way to do this is to subtract the number of incorrect answers from the number of correct answers. This is the most commonly used method. However, it does a distinct injustice to the pupil of considerable intelligence who is inclined to be an erratic worker. Especially is this true when the tests are conducted in a short period of time conditions, one minute, two minutes, three minutes, etc. The scores made by such pupils will be lower than their real ability.

Because of such weaknesses, other forms of the checking method are utilized. We have made use of these methods in our preliminary investigation. We refer to them in order that the reader who is interested in this work may have the benefit of the suggestions.

#### EXERCISE V

Underline the names of the seams which should be used in making a gingham dress.

Location	Kind of Seam	Percentage Failing	Kind of Seam	Percentage Failing	Kind of Seam	Percentage Failing	Kind of Seam	Percentage Failing
Straight skirt.....	fell	72	French	20	plain	36	false French	23
Under-arm seam of waist.....	fell	39	French	22	plain	60	false French	27
Shoulder.....	fell	36	French	58	plain	66	false French	73
Seam at armseye...	fell	59	French	67	plain	65	false French	39
Sleeve.....	fell	36	French	22	plain	55	false French	30

4. Underline the names of the materials with which care must be taken so that the upper part of each piece in the pattern will lie in the same direction:

Material	Percentage of Pupils Failing	Score Value
1. Serge.....	46	48
2. Georgette crepe.....	16	30
3. Broadcloth.....	76	63
4. Shepherd's check.....	76	63
5. Brocades with vine design.....	22	35
6. Velvet.....	67	58
7. Satin.....	82	68
8. Scotch plaid.....	15	29

5. Underline the names of the materials with which care must be taken in cutting because the material has a right and wrong side.

Material	Percentage of Pupils Failing	Score Value
1. Flannelette.....	64	57
2. Taffeta silk.....	40	45
3. Embroidered voile.....	4	16
4. Broadcloth.....	60	34
5. Satin.....	32	11
6. Velveteen.....	18	32
7. Calico.....	15	29
8. Dotted swiss.....	21	34

Here one is asked to underline one of four or more words. The element of chance or guessing is very slight. In history, uses of this method have already been proposed in the design of information tests. For example, the first exercise in the *Harlan's Tests of Information in American History* consists of the following:

At the right of the page are the names of some men mentioned in American history. Fill in blanks with the names which properly belong there.

1. America was discovered by..... Jefferson  
near the close of the fifteenth century. Cornwallis
2. The name of the man who is supposed to have discovered the Pacific Ocean is..... William Penn  
Lafayette  
Patrick Henry
3. The first president of the United States was..... Columbus  
Benjamin Franklin
4. .... Washington  
is the name of a distinguished Frenchman who aided John Cabot  
the colonists in securing their independence. Balboa
5. ....  
surrendered to the colonial troops at Yorktown.

*Advantages of the checking method.*—If a checking method is used in which the chances of obtaining a correct score by guessing are only one in four, one in five, or less, this method has certain definite advantages which favor its use. First, a scoring scheme can be constructed by which the achievements of the pupils can be much more accurately gauged than with the completion test. With the straight completion test, a number of different answers will be found which will fill the gaps in the sentences with varying degrees of correctness. It is very difficult to design a scoring scheme which will assign proper credit to these various answers. With the checking method, however, one can arrange lists of possible

responses of varying degrees of correctness (as in the Harlan history test). Thus the difficulty of the tests may be graded. It has been stated earlier that the design of information and reasoning tests did not rest upon the same principles. We take the occasion here, therefore, to turn the discussion to methods by which reasoning tests may be developed.

#### PRINCIPLES OF DESIGN OF TESTS

The reader will note that with each part of the reasoning tests we give two facts—one, percentage of pupils failing, the other, the score value. For example, in Problem I, page 80, the percentage of pupils failing was 36, the score value, however, 43. In Problem 5, Series C, the percentage of pupils failing was 60, and the score value was 54. Although a study of these percentages of pupils failing leads to no final conclusion at the present time concerning teaching in home economics, yet the material is pertinent to the whole discussion of how to construct reasoning tests with such material.

*Fundamental criterion for the design of reasoning tests.*—Irrespective of training, there will always be gross individual differences in the ability of children to reason with various kinds of content. The subject-matter of the test must distinguish clearly between children of widely varying abilities. To do this it must contain some very easy material that all but a very small fraction of the student body can deal with successfully; then it must contain some very difficult material which only a small percentage of pupils can handle; and finally it must include a larger amount of material of moderate degrees of difficulty which varying proportions of the rank and file of our children can master. That is, the central principle of design of a standardized reasoning test is that it shall recognize accurately differences that exist in children's abilities. It can do this only when the subject-matter is correspondingly differentiated.

*Basic assumption: difficulty determined by the proportion of pupils unable to perform the various tasks.*—The discussion of the central principle of design leads naturally to a second question, namely, how to determine the difficulty of the material to go into the test. Two basic methods have been followed by those working in this field. One has been that of asking specialists—generally teachers of a given subject—to estimate the degree of difficulty. This has been commonly referred to as *the teacher-judgment method*. In some fields of learning it has been shown that this method is thoroughly inadequate (for example, in arithmetic and mathematics). In other fields, such as handwriting,

drawing, composition, etc., it has been found to be the only feasible method.

The method which has been found to be of most use in fields like home economics, however, has been that of assuming that mental tasks are difficult in proportion to the percentage of children unable to perform them. Hence the term "proportion-of-pupils-failing" method of designing tests.

*Reasoning tests arranged in order of increasing difficulty.*—In order to set the material before the student in the proper fashion so that the proportion of pupils who are unable to perform set tasks shall be determined, it is necessary to arrange the test material in exact order of increasing difficulty. The easiest task should be set first; the next hardest, second; and the most difficult should come last—thus forming what is called, variously, a "difficulty" test, a "development" test, or a "power" test. The ability of the pupil in such a test is shown by the scores on the different parts of the test which he has been able to do. If the test is refined enough, his ability can be measured by the score which is assigned to the most difficult part of the test which he can manage.

*Need for knowing or assuming the shape of the distribution of scholastic ability.*—It is not enough, however, to be able to determine the proportion of pupils failing on the different kinds of subject-matter. This is only the first step in determining the relative scores that should be assigned to the parts of the test. *Difficulties are not directly proportional to the percentage of pupils failing in the various tasks.* This was the error that some of our workers made in the early years of the standardized-test movement.

An example will make the point clear. Suppose three reasoning questions had been answered by 1,000 pupils. Eighty per cent of the pupils failed Question A; 40 per cent, Question B; 20 per cent Question C. Let us locate these questions graphically on a horizontal line which can be thought of as representing a scale of difficulty as in Figure 17.



FIG. 17.—A scale of difficulty or value for the various parts of a test. Three questions are to be located on this scale so that the distance of the location of each question from 0 will indicate the relative "difficulty" or value of the question. We use "proportion of pupils failing" and a distribution curve of pupils' abilities. See Fig. 18.

Question A can be considered twice as difficult as Question B and four times as difficult as Question C *only when the shape of the distribution*

of children's abilities is rectangular. The form or shape of a curve of distribution of pupils' abilities is very important. In plotting one, a point on the horizontal base line *always* represents the value or score assigned to a certain task. The height of the vertical line erected at any point on the horizontal, or the distance from the base line to the curve, *always* represents the number of pupils who have shown the given amount of attainment. Hence, when the figure is rectangular, it means that the number of superior children equals the number who are inferior. Figure 18 illustrates graphically what the situation would be. Remember that the area of each little rectangle (or for that matter the base of

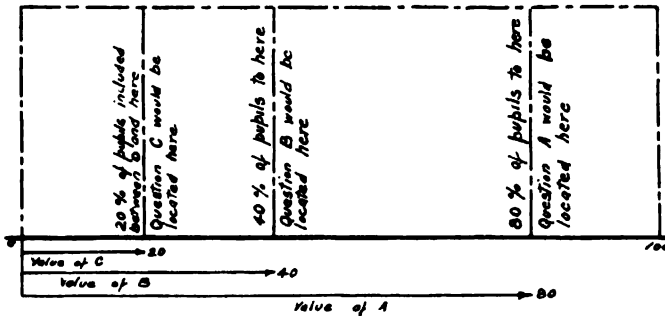


FIG. 18.—An illustration of a hypothetical rectangular distribution of children's abilities.

each rectangle) represents the number of pupils who are unable to handle successfully the various parts of the test. Note that there is only one condition under which the length of the base line from 0 to where Question A stands can be four times as great as the length of the base line from 0 to where C stands, namely, that the curve of children's abilities shall stand at the same height all the way along.

*The distribution of children's ability is not rectangular in shape.*—It is clear, even to the layman, that there are not just as many geniuses in the world as there are average children. We know perfectly well that mediocrity predominates all about us and that exceptional children, either subnormal or accelerated, are met in far smaller proportions. During the past three generations this fact, common to individual experience, has been set out clearly by means of careful measurement. Many studies have been made since the beginning of the science of anthropology eighty years ago. Measurements of stature, circumference of the head, cephalic index, length of various bones and parts of

the body, and other physical measurements have been compiled. Almost always the same shaped distribution results. Figures 19 to 21 illustrate the essential principles that have been developed.

*The shape of the distribution of human abilities accords with the so-called "normal probability curve."*—As investigators noted the frequency with

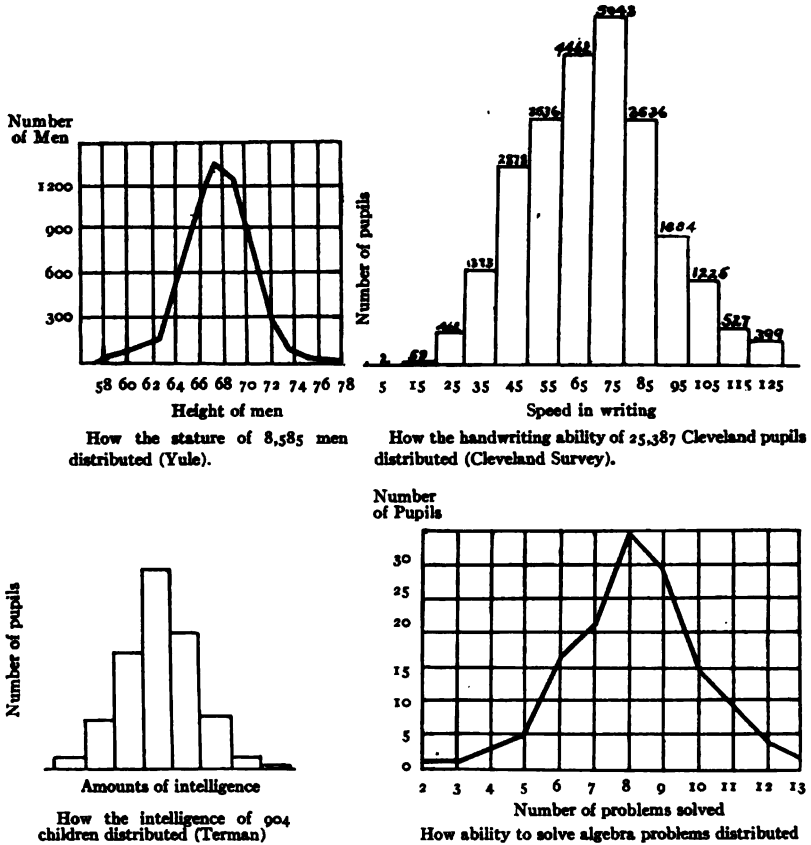


FIG. 19.—Illustrations of the shape of the distribution of human traits

which distributions of the same general shape recurred, they developed typical mathematical curves which would generalize as "law" the scattered measurements which had been compiled. Anthropological measurements which have been graphed in Figures 19 to 21 represent merely the distribution of the traits of a few individuals. From the standpoint of "law," one is concerned rather with the theoretical



distribution which these frequency curves tend to resemble as larger and larger numbers of cases are collected. Mathematicians have developed a few frequency curves which represent various kinds of laws of distribution. One of these, the one portrayed in Figure 22, is called the

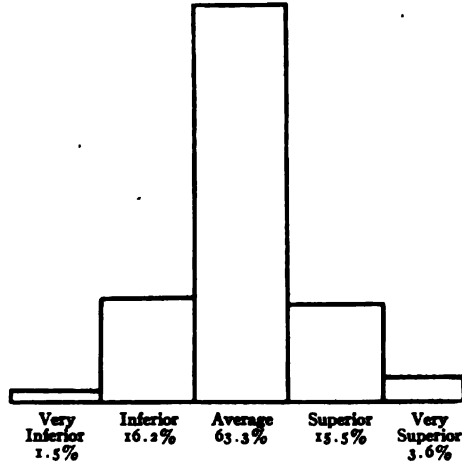


FIG. 20.—The distribution of the intelligence of 1,458 children (Terman)

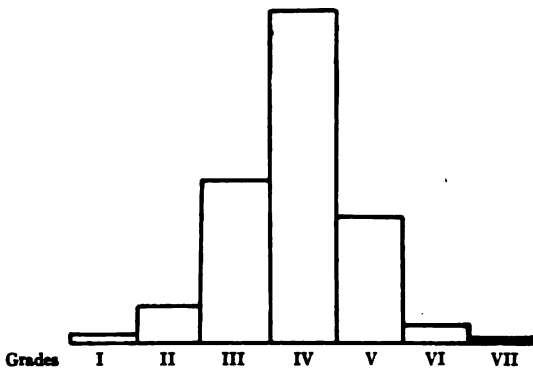


FIG. 21.—Percentage of 1,896 ten-year-old boys located in each grade, Salt Lake City Schools, May, 1915 (Terman, 1919).

“normal probability curve” (sometimes styled the “normal frequency surface,” or the “LaPlace-Gaussian curve,” or the “curve of error”). It has been found that many anthropometrical measurements fit this curve with considerable precision.

So much for the distribution of physical traits. In recent years many mental measurements have been made. Distributions of the same general shape commonly recur—distributions which reveal many “average” measurements and few exceptional ones. Furthermore, they shade off gradually on either side of the average. The curve is very flat, indeed, at the extremes, showing that there are very few individuals in which the trait is present or absent to an exceptional degree. The detail of these various measurements need not be quoted.

These data which refer to the shape of the distribution of human traits are given in order to convince home economics workers that achievements on sound tests must distribute somewhat in accordance

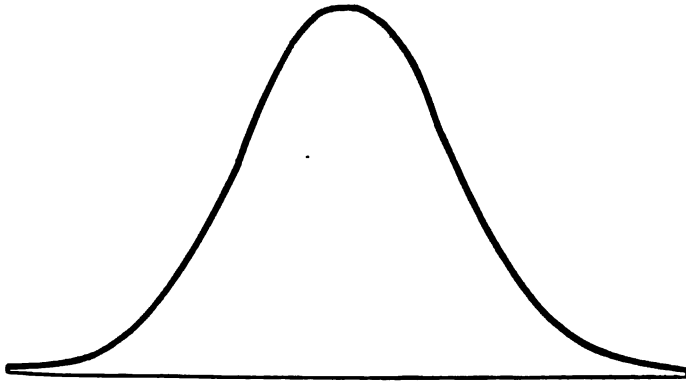


FIG. 22.—A normal probability curve illustrating the theoretical shape of the distribution of pupils' abilities.

with a “normal” distribution. There is no argument for great precision in the shape of this distribution of actual measurements. A need is felt, however, for the careful use of a distribution curve which has been shown to agree approximately with the general way in which human traits are differentiated.

#### APPLICATION OF PRINCIPLES OF DESIGN TO REASONING TESTS IN HOME ECONOMICS

*How to use the normal curve in assigning values to the parts of a test.*—This technical discussion of the distribution of human traits can now be applied to the problem of assigning values to the parts of a reasoning test in home economics. Refer to Figure 18 and the discussion of the fallacy of a rectangular distribution. The importance of avoiding

that fallacy should now be apparent. Question A is not four times as hard as Question C, nor twice as hard as Question B. How can one determine the relative values to give these questions? The answer is direct: by making the fundamental assumption that reasoning ability with home economics content distributes, closely enough for practical purposes, in accordance with the normal probability curve. This is the second assumption, and must be combined with the earlier one, namely, that scores on the parts of the test depend upon the percentage of pupils unable to do the work. By the use of these two assumptions the technique becomes complete. The score that should be assigned to

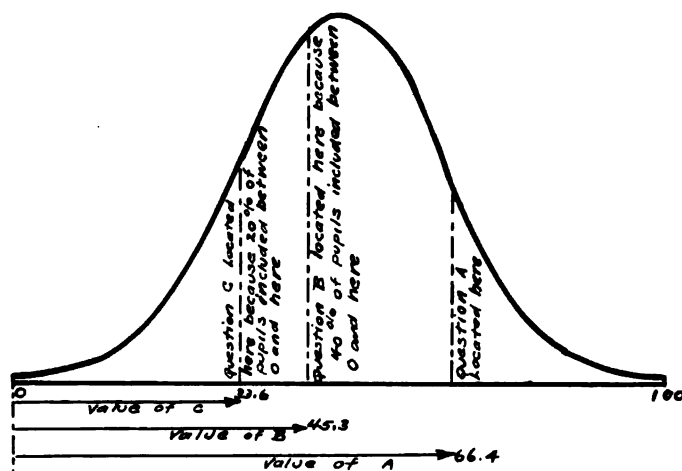


FIG. 23.—An illustration of a more accurate scoring of questions A, B, and C, the scores having been located on the assumption that pupils' abilities fit the normal curve.

Question A (based on certain technical statistical assumptions that need not be discussed here) is 66.4; that for B, 45.3; and that for C, 33.6.

*Why are these scores more correct than any others?*—The answer is found from a study of the distribution curve. Figure 23 explains the situation. The aim is to locate each question at a given point on the scale of difficulty. The value of the question, therefore, will be the distance that this point is from the zero point at the left. Thus Question A is 66.4 units from the zero point because between the zero point and a vertical line erected at that point is included 80 per cent of the area of the whole curve. (The area of the curve represents the pupils

in the group.) Eighty per cent of the area corresponds to the 80 per cent of the pupils who failed. Similarly Question C has a score of 33.6 instead of 20, because one has to go out on the base line 33 units in order to include 20 per cent of the area of the curve. Statements like this call attention strikingly to the important characteristic of flatness of the normal probability curve near the extremes. Thus we see that Question A can be regarded as only about twice as difficult as Question C instead of four times; that is, 66.4 contrasted with 33.6, instead of 80 per cent contrasted with 20 per cent.<sup>1</sup>

*Distribution of results of test scores in Series A, B, and C.*—Figure 24 shows graphically the distribution of scores which were made by 148 pupils in Series A, 146 pupils in Series B, and 138 pupils in Series C. It shows that even in this preliminary design of a reasoning test questions have been graduated in difficulty so as to differentiate children of varying abilities. The reader should not conclude from this that mere rough accordance of the distribution of scores with the general shape of the theoretical curve is a criterion for evaluating the validity of the questions themselves. Whether we ought to include certain questions in such a test will depend upon the application of the social criterion rather than the mere utilization of psychological ones. It is apparent, however, that we have in this technique a procedure by which tests can be designed which will discriminate very clearly, indeed, between the differing abilities of the children in our classes.

#### ASSIGNING SCORES TO THE PARTS OF AN INFORMATION TEST

The practice has been adopted recently of scoring the parts of an information test (which is either of the completion or checking type) by the same method as that described in the section on reasoning tests.

It is possible, of course, to give a great many fact questions to large numbers of pupils, to score the percentage of failure on each question, and to locate each question on the base line of the normal probability curve, thus assigning it a "score." It will be impossible, however, to conclude whether this score is a fair measure of the "difficulty" of the question or of teaching emphasis. It appears to us that this involves a fallacy which we should avoid in the design of information tests.

<sup>1</sup> The values which correspond to percentages of pupils failing can be found in statistical Tables V and VI in H. O. Rugg's *Statistical Methods Applied to Education*. In chapters vii and viii of that book explanations are given of the way in which such tables are constructed and of the theoretical development of the normal probability curve itself.

After minimum essentials shall have been established, the content of information tests which are used at the close of the year should

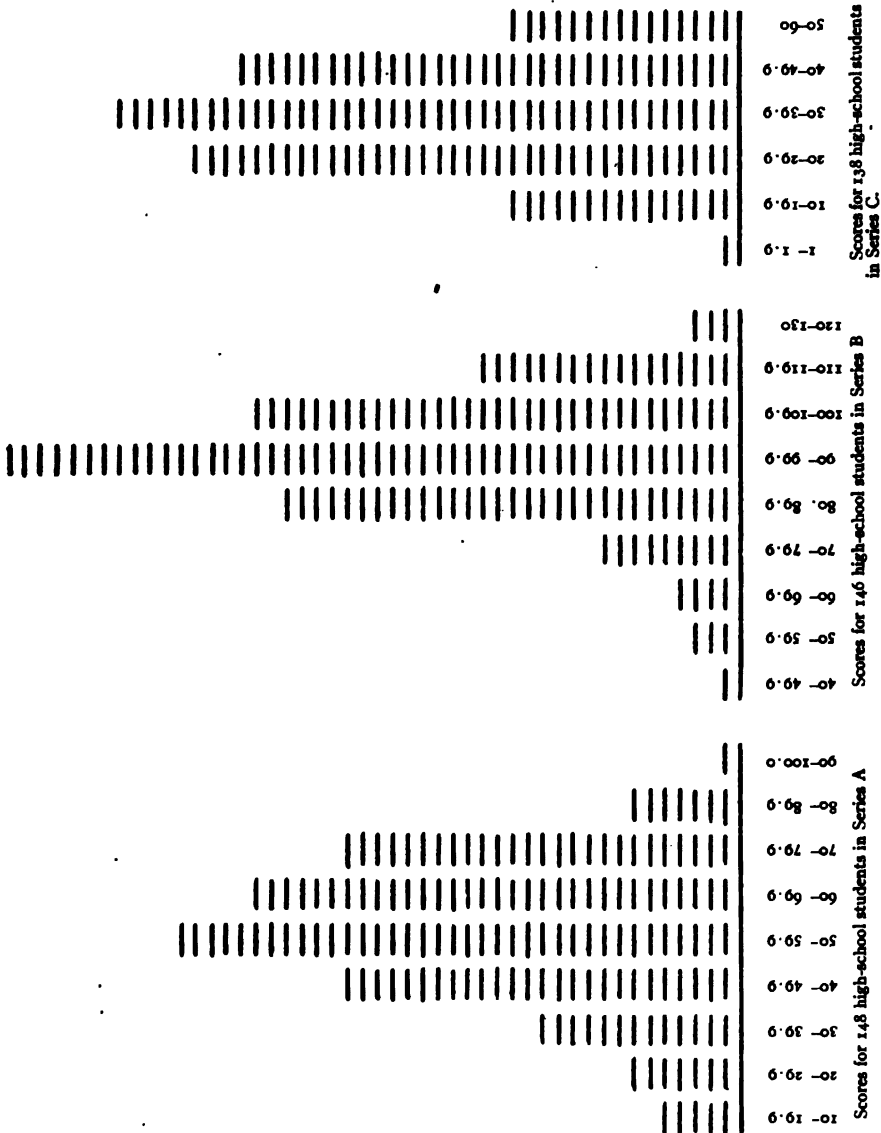


FIG. 24.—Distribution of scores in Series A, B, and C made by pupils in home economics tests. The numbers along the base line represent the various scores in class intervals of 10. The short lines above each score show the frequencies.

include only such minimum essentials, each fact of which should be learned by every pupil in the class. Therefore, instead of having a

graduated scale in which one question is answered by 5 per cent, another by 20 per cent, another by 30, 40, etc., until finally we include questions answered by nearly all of the pupils correctly, it appears to us that this minimum list of facts should be learned 96 or 97 per cent correct. The situation is directly analogous to that in spelling. Scales are already available for the measurement of spelling ability. One's spelling ability is measured by the percentage of words out of a given list which he can spell correctly. Again we insist that *the correct procedure would be to insist upon 100 per cent efficiency for each word in a foundation list.*

*Value of scoring tentative information tests.*—It is conceivable that some gain will accrue from the use of test questions which are scored in this preliminary stage of our movement. With each part of the exercises which are reported from pages 78 to 88, the "percentage of pupils failing" is stated. Doubtless it will be stimulating to teachers to note the variability in the percentages of failure on the various kinds of questions. Attention is called to the fundamental importance of recognizing that *this refers principally to a matter of teaching emphasis.* We should be very critical, indeed, of our instruction if, on topics that can be agreed upon by groups of home economics teachers, 50 per cent, 70 per cent, or 80 per cent of the pupils failed to handle the material successfully immediately at the end of the year's instruction. Such results are revealed by a study of the exercises reported. As indicated in earlier sections of this chapter, one cannot conclude definitely concerning the causes of failure in these particular cases. Such results may be due to a lack of proper distribution of teaching emphasis. Certainly there is evidence to conclude that a disproportionate emphasis is placed on information and technique rather than on the formation of judgment. If this be true, then the unusual percentages of failure on some of those basic topics represented by these exercises is all the more alarming. The important questions of how the teacher distributes her time and emphasis should be canvassed very carefully by administrative officers.

#### WHAT STANDARDIZED TESTS WILL DO FOR HOME ECONOMICS

Before leaving this discussion, however, let us remind the reader that the design of tests will provide a twofold stimulus for the improvement of the home economics situation. First, they will improve teaching by clear definition of instructional goals. That matter has already been referred to. Secondly, those tests that deal primarily with information

and with technique will focus attention upon the fundamental question of establishing minimum essentials in the course of study. We are convinced that no matter is more urgently demanding the attention of home economics workers at the present time than that of minimum essentials. The most pressing need is to organize systematic investigations and to conduct social studies of homes and communities by which a clear statement can be made of the socially worth-while facts that should form the nucleus of our curriculum. The most powerful instrument to expedite this movement is the construction and wide-spread dissemination of information tests in home economics.

## CHAPTER VIII

### SCALES FOR MEASURING SKILL IN MACHINE SEWING

We have illustrated how the measuring movement can be carried out in home economics by the design of reasoning tests and tests for the acquisition of socially valuable information. These come first because we wish to emphasize their greater importance. Especially will the widespread use of tests for "judgment" stimulate a greater attention to generalizing abilities.

The development of motor skill is also one of the established goals of instruction. We need scales to measure the degree to which our pupils have mastered certain important skills. The most obvious phases of the work with which to begin are types of sewing.

During the past year two<sup>1</sup> of the present writers have experimented with the development of measuring scales for machine sewing. These have to do with some of the simplest processes used in garment construction. Reproductions of the scales are found in Plates I-XII. The scales reported in this monograph are for two constructive processes which make their appearance early in sewing classes and are in constant use, namely, French seams and hems on a straight edge. The series is capable of extension until it includes all the constructive processes commonly used.

*Criteria for designing scales.*—In working out the kind of scale which is to be used as the measuring instrument for these tests several points were kept in mind: (1) to be most useful the scale must be not merely one which would grade work by means of an impression in regard to its general excellence, but one which would analyze the factors which contribute to that general excellence; (2) the scale must be an adequate measuring device, but it must also be sufficiently simple to promote economy of time and effort in its use (over-refinement in detail would defeat its purpose); (3) as the real object of tests is not merely to discover defects but also to assist in correcting them, the scale must be graphic in form and must contain sufficient explanatory material to make it useful as a corrective device in the hands of pupils. These three considerations were the factors which controlled the form of the

<sup>1</sup> Florence Williams and Clara B. Knapp.



scale and, consequently, influenced the treatment of the material which was collected.

*What is done in the tests.*—In these tests each pupil is asked to make a French seam or a hem, as the case may be, under standardized conditions, in a given length of time, on material furnished by the persons who are giving the test. Two of the tests follow.

#### TEST B. MAKING A FRENCH SEAM

1. *Material.*—Cotton material with a distinct difference between the right and the wrong sides. Two pieces, 10×3 inches.

2. *Instructions.*—

- a) Have each pupil thread her machine with white thread and test the stitching. The pupil is to judge for herself the length of the stitch and the tension before beginning the test.
- b) Distribute material to each pupil: two pieces of cloth, four pins, printed directions and labels.
- c) Have each pupil fill out the label.
- d) Give the following directions:

Join these two pieces of material by means of a French seam along the longer edge, using any method which you think best to secure a good result. Use the presser-foot as a guide for the width of the finished seam. Fasten the threads at both ends of the stitching by tying. Begin when I say, "Begin," and stop when I say, "Stop." Paste label on the inside of the finished work.

Time allowed—10 minutes.

To each pupil were given printed directions similar to (d) under *Instructions* and the label mentioned in (c) asked her to record the following items:

Date.....  
 Town.....  
 School.....  
 Grade.....  
 Age.....  
 Length of previous instruction in machine sewing;  
 (1 term, 2 terms, etc.).  
 .....  
 Number of times you have used a sewing machine  
 (if very few).  
 .....

#### TEST C. HEM ON A STRAIGHT EDGE

1. *Material.*—Rectangular piece of cotton material with a distinct difference between the right and the wrong sides—10×4 inches.

2. *Instructions.*—

- a) Same as in Test B.
- b) Distribute materials—one piece of cloth, six pins, blank labels.
- c) Same as in Test B.
- d) Give the following directions:

On one of the long edges of this piece of cloth make a hem one inch wide when finished. Use any method which you think best to secure a good result. Finish each end of the stitching by retracing (the teacher may use any term with which the class is familiar). Stitch as close as possible to the edge of the finished hem—not more than  $\frac{1}{8}$  of an inch from the edge. Begin when I say, "Begin," and stop when I say, "Stop." Paste label on work in such a way that it does not cover any part of the hem.

Time allowed—10 minutes.

In this test printed directions and labels were given to pupils. The time allowance had been determined experimentally in the first three classes in which the tests were tried.

Where the preliminary tests were given as a preliminary study the tests described above were given in the following schools: Elementary School of the School of Education, University of Chicago; Burns School, Chicago; Farragut School, Chicago; Myra Bradwell School, Chicago; Andrew Jackson School, Chicago; D. J. Corkery School, Chicago; Field Grammar School, Leominster, Massachusetts; Phillips Street School, Fulton, New York; Central School, Laporte, Indiana; Laporte High School, Laporte, Indiana; Haish School, De Kalb, Illinois; Ellwood School, De Kalb, Illinois.

Two hundred and twenty samples of Test B were received and two hundred and thirty-five of Test C. These represented Grades VI, VII, and VIII.

#### ANALYSIS OF FIVE FACTORS WHICH CONTRIBUTE TO EXCELLENCE IN THE SEWING PRODUCT

After a number of sample tests had been returned the task of analyzing the general excellence of a given result into the five factors which contribute to that result was undertaken.

*Tension and length of stitch.*—The factors which are most easily distinguished and defined are first, tension, and second, length of stitch. The tension may be exactly right, it may be so loose or so tight as to destroy the usefulness of the seam where it appears, or it may be so adjusted that its appearance is not all that could be desired, and yet its usefulness is not seriously impaired. The length of stitch may be too long or too short, it may be fairly good or it may be very good.

*Spacing.*—A third factor which contributes to general excellence is the distance and the uniformity of the distance between the line of stitching and the line which it should follow; this includes both the straightness of the line of stitching itself and the space between the

line of stitching and the edge which it should follow or to which it should lie parallel. Spacing was finally adopted as a sufficiently descriptive term for this factor.

*Constructive elements.*—A fourth factor includes such points as making a hem or seam on the proper side of the material, trimming a French seam in such a way that no raw edges will appear on the right side of the finished seam, making the edges at the turn of a French seam exactly even, and turning a hem to a uniform specified width. These points are included under the term, "constructive elements."

*Neatness.*—A fifth factor has been called "neatness." It includes such points as beginning stitching properly so that the thread does not become knotted, finishing stitching at the ends in the way prescribed in the directions, and being careful to make the first row of stitching properly so that a second row will not have to be added in an effort to correct it.

#### SCORING AND GRADING THE WORK

*How the specimens were scored.*—After all the samples had been collected they were numbered and submitted in turn to each of six competent judges, of similar training, to be ranked in the following fashion. Each sample was ranked "good," "medium," or "poor," with reference to each of the five factors considered separately. For example, Judge X ranked Sample 117 of Test B as poor in spacing, good in tension, good in length of stitch, poor in neatness, and medium in constructive elements. Each judge estimated only one factor at a single sitting; that is she divided all the samples into three piles representing the three qualities with reference to spacing alone; then this ranking was recorded; at another time she divided them with reference to tension alone, and that ranking was recorded; so on until the rankings of all the judges had been recorded in tabular form.

The tabulations were then examined for the purpose of discovering which samples had been ranked as of the same quality with reference to a given factor by every one of the judges. For example, in Test B, Sample 18 was ranked by all the judges as poor in constructive elements; Sample 28 was ranked as good in constructive elements by all the judges; Sample 47 was ranked medium by all the judges in constructive elements; and so on throughout the list of the four remaining factors: tension, length of stitch, neatness, and spacing. It was found that the average of absolute agreement by all the judges was 11.3 per cent. Table XXVII shows the percentages of agreements of judges.

Those samples that were ranked by each one of the judges as similar in quality with reference to a given factor were then considered typical examples of that quality for that factor. From these typical examples, specimens were chosen to represent a given quality, and these specimens were photographed with as much attention to detail as would bring out the typical defects or excellences most clearly. Explanations have been added to the printed plates to bring out special points more definitely.

TABLE XXVII

## PERCENTAGES OF AGREEMENTS OF JUDGES ON FIVE FACTORS

Tension.....	8.5 per cent
Length of stitch.....	4.15 per cent
Spacing.....	16.75 per cent
Constructive elements.....	11.5 per cent
Neatness.....	15.75 per cent
Average.....	11.3 per cent

*How to mark pupils' work with the scale.*—Grading a piece of work by this scale is simple and takes little time. One merely compares the piece of work that is to be graded with the printed scale and ranks it as good, poor, or medium in length of stitch, tension, neatness, constructive elements, and spacing, according to that quality on the printed scale which it most closely resembles in each of those factors. For example, the bit of work to be graded may be a French seam in a middy blouse. The instructor may find that according to the scale it has qualities that make it fall in the following grades: Tension, "good"; length of stitch, "good"; neatness, "poor"; spacing, "medium"; constructive elements, "medium."

In order to facilitate the process of marking a piece of work, it is necessary to assign numerical values to the qualities "good," "poor," and "medium." By the use of numbers one can easily find a mark for general merit more easily than by the use of the terms "good," "poor," and "medium." It was assumed that 1, 3, and 5 would approximate the true values of the different qualities on the scale. (This assumption was carefully discussed from the standpoint of statistical validity. Various other weighting schemes gave no better promise of effective use than this.) Thus, when poor equals 1, medium equals 3, and good equals 5, it is simple to find a value for general merit. Table XXVIII shows how a mark for general excellence may be assigned to a piece of work.

*Scores have been made practical by translating into school marks.*—To facilitate further the use of the scale, the possible scores have been translated into school marks and printed on the sheet with the scale. It was decided by the judges, after study and statistical manipulation, that the passing mark should be 1½. To make this the passing mark will fail

TABLE XXVIII

A MARK OF GENERAL EXCELLENCE FOR A PIECE OF WORK

Tension.....	1
Length of stitch.....	5
Spacing.....	1
Constructive elements.....	5
Neatness.....	3
	15
Average.....	3

5.28 per cent of the pupils. If the reader is interested in the statistical procedure, he will find next a description of the method. All the possible scores were translated into the school marks most commonly used. The table printed on the sheet with the scale itself is self-explanatory as far as its use is concerned.

STATISTICAL METHODS OF CONSTRUCTING THE SCALES

It was assumed that ability in making French seams and hems is distributed according to the normal probability curve. Therefore, in order to check the validity of our method of scoring the samples the averages of the judgments were plotted in graphic form so as to compare them with the theoretical curve. It was found, as indicated by Figures 25-29, that the abilities as ranked by the six judges for the separate factors do not distribute according to the normal probability curve. The theory of the normal probability curve assumes that there are a few people of very poor ability. These figures show that if the rankings of the judges are to be considered correct, the abilities do not all distribute themselves in the same fashion. This may be due to one of two things. First, the teaching emphasis may have been such that certain factors were emphasized and others neglected. Secondly, the standards of the individual judges may have been such that when they averaged the six judgments the curve distributed itself in rectangular form rather than according to the theory of the normal probability curve. It is of interest at this point to note that the majority of the

judges agreed upon 60 per cent of the samples. Table XXIX shows how the judgments were agreed.

TABLE XXIX  
PERCENTAGE OF SAMPLES ON WHICH SIX OUT OF SIX JUDGES, FIVE OUT OF SIX JUDGES,  
AND FOUR OUT OF SIX JUDGES EXACTLY AGREED IN SCORING

Agreements	6 out of 6 Judges	5 out of 6 Judges	4 out of 6 Judges	Total of Agree- ments by Majority of Judges
	Per Cent	Per Cent	Per Cent	Per Cent
Tension.....	6.50	18.9	34.1	59.50
Length of stitch.....	4.15	12.0	36.0	52.15
Spacing.....	16.75	14.7	36.7	68.15
Constructive elements.....	11.50	15.4	27.6	54.50
Neatness.....	15.75	22.1	25.2	63.05
Average of agreements.....				59.47

Number of  
Samples

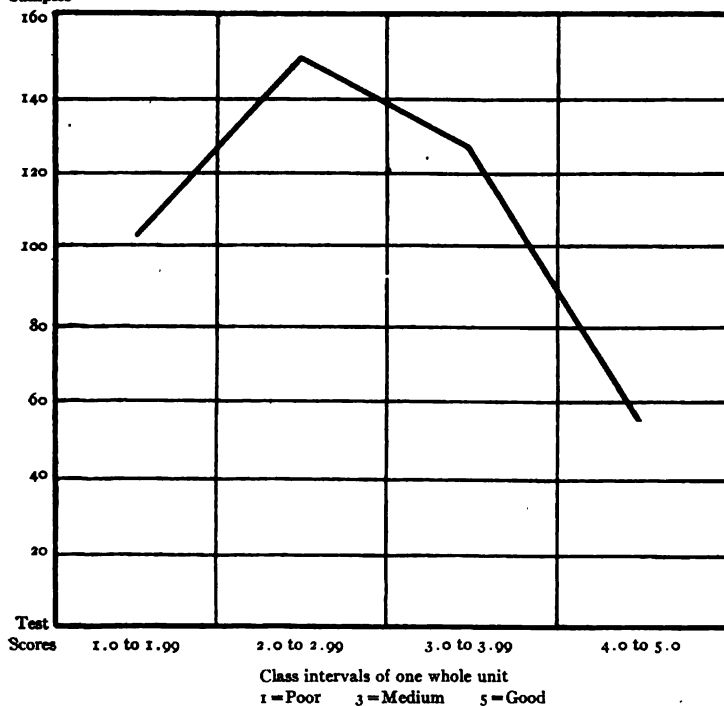


FIG. 25.—Distribution of the averages of the six judgments on tension in French seams and hems.

The table shows that a majority of judges agreed upon only 52.15 per cent of the samples in length of stitch as compared to an agreement

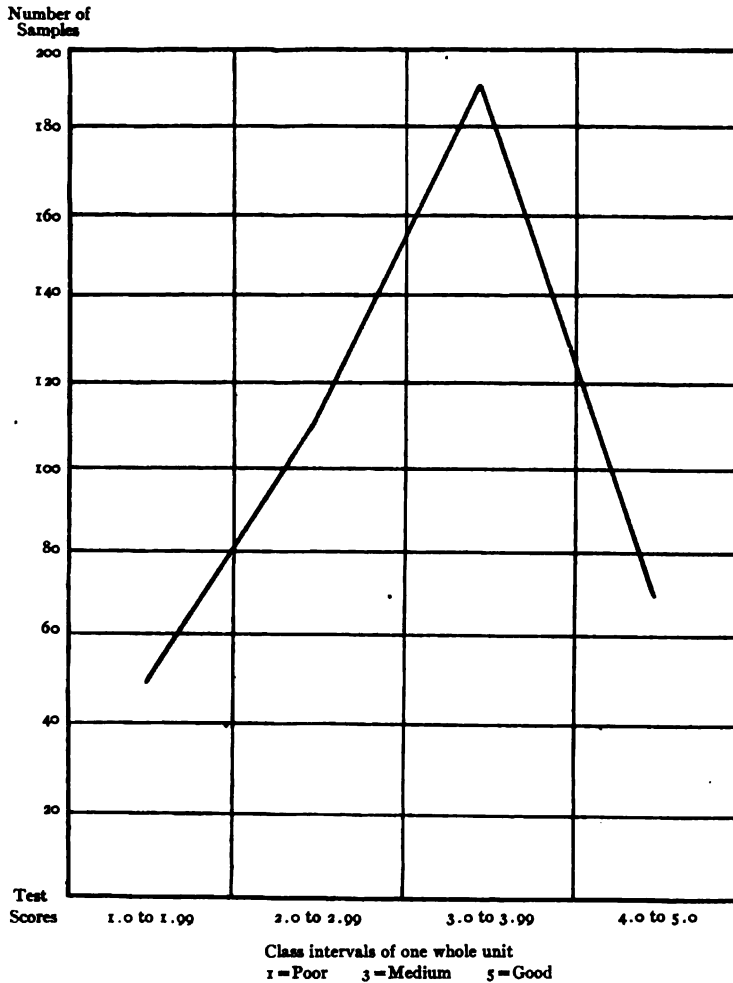


FIG. 26.—Distribution of the averages of the six judgments on the length of stitch in the French seams and hems.

upon 68.15 per cent in spacing. This would indicate that less reliability can be placed upon the judgments in length of stitch than upon those in spacing. In the interpretation of the curve made by the judgments

on the length of stitch there is less reliability on its truth, although it approaches the probability curve in shape. On the other hand, the curve made by the judgments for spacing has a much larger agreement of judges on samples, yet does not approach the normal probability

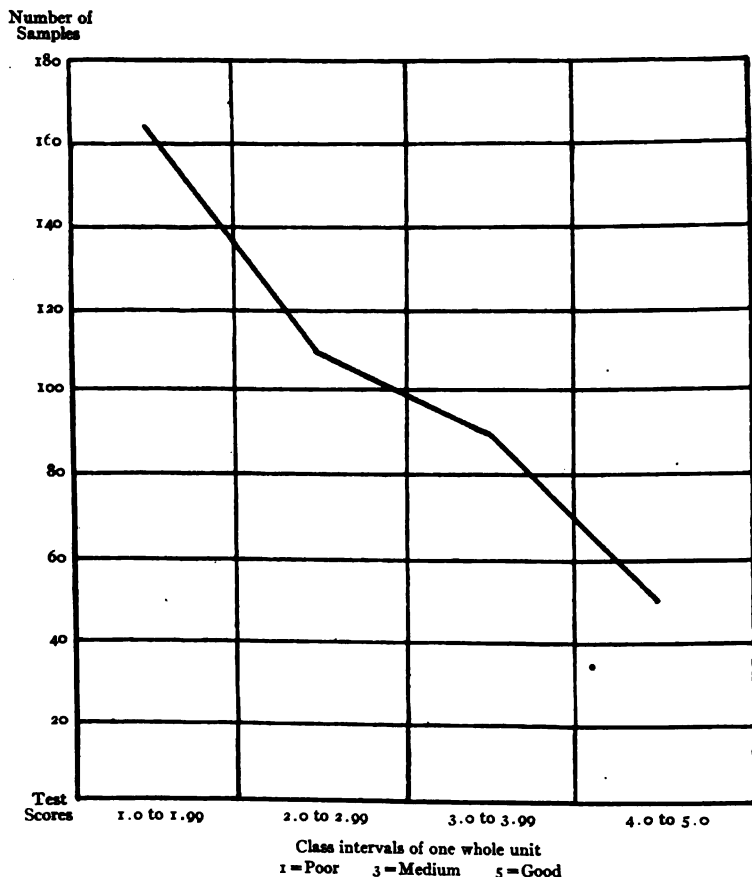


FIG. 27.—Distribution of the averages of the six judgments on spacing in French seams and hems.

curve in shape. It shows a distinctly upward slant at the left and downward at the right. This may be interpreted to mean that the teaching had not sufficiently emphasized this factor as an element in teaching pupils to make French seams and hems. Or it may mean that spacing is of greater difficulty to the learner than length of stitch or tension.



No attempt has been made in this investigation to determine the relative difficulty of the different factors that contribute to the making of good seams and hems. The results of such an investigation would without doubt be a great aid in teaching sewing. The curve made by the judgments on neatness also shows a tendency to rise at the left and drop at the right. This can be interpreted in the same way.

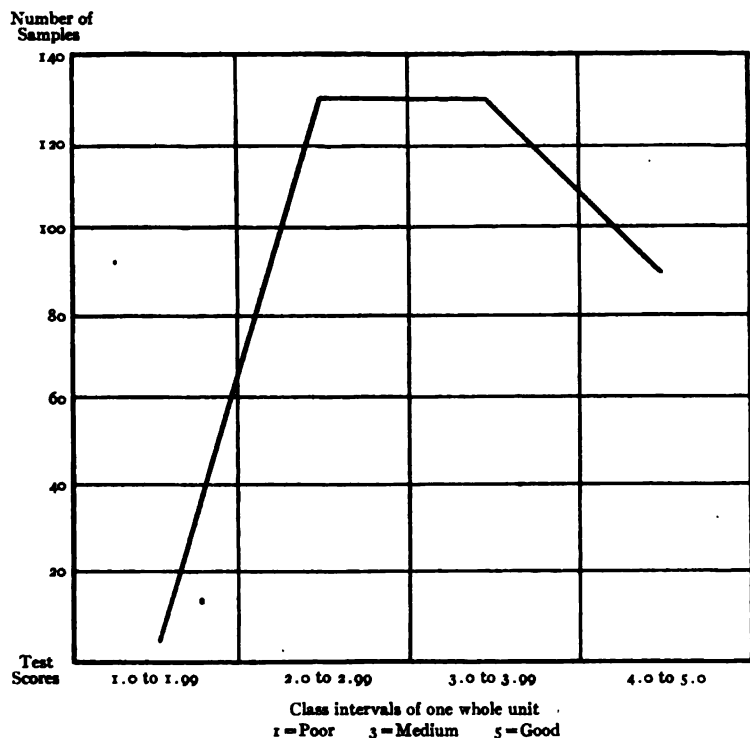


FIG. 28.—Distribution of the averages of the six judgments on constructive elements in French seams and hems.

As long as all of the factors judged are exclusive of one another and include everything that contributes to a good piece of work, the average of these judgments on the different factors should give the judgment for general merit. In Figure 30 a curve is plotted that is made from the data obtained by taking the average of the average judgments on each factor. For example, Sample 219 was ranked by six judges five times, that is, for each of five factors. The average of the six judgments

for spacing was 2, the average for constructive elements was 3, the average for neatness was  $2\frac{2}{3}$ , the average for length of stitch was  $4\frac{1}{3}$ , the average for tension was  $1\frac{2}{3}$ . Then the average of the averages will give the value for general merit, or 2.73. In this manner the average was found for every sample, and a curve was plotted, as shown in Figure 30.

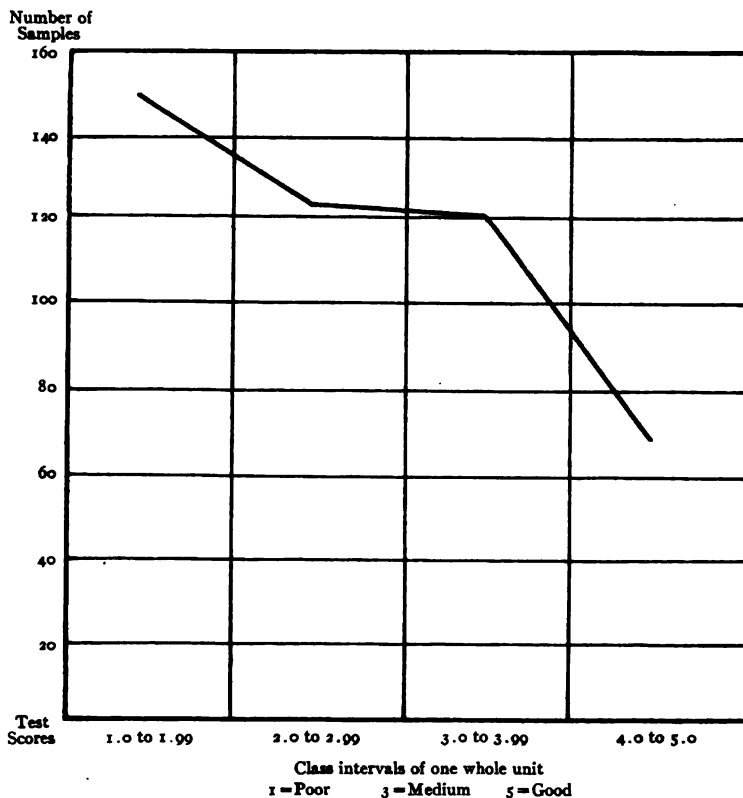


FIG. 29.—Distribution of the averages of the six judgments on neatness in French seams and hems.

As stated above, the assumption was made that ability in machine-made French seams and in hems distributes according to the law of the normal probability curve. To test the degree to which our scoring scheme properly differentiates abilities, a normal probability curve was superimposed on the curve plotted from the values of the averages. It seems that, considering the fact that there are only 455 cases used, the curve follows rather closely the line of the normal probability curve.

### TRANSMUTATION OF SCORES INTO SCHOOL MARKS

Every possible score from the use of the scale has been translated into each of three typical marking schemes—that is, with the passing mark at 65, at 70, and at 75, respectively. The passing score on the scale was put at 1 $\frac{1}{2}$ . This fails 5.28 per cent of the cases. As shown

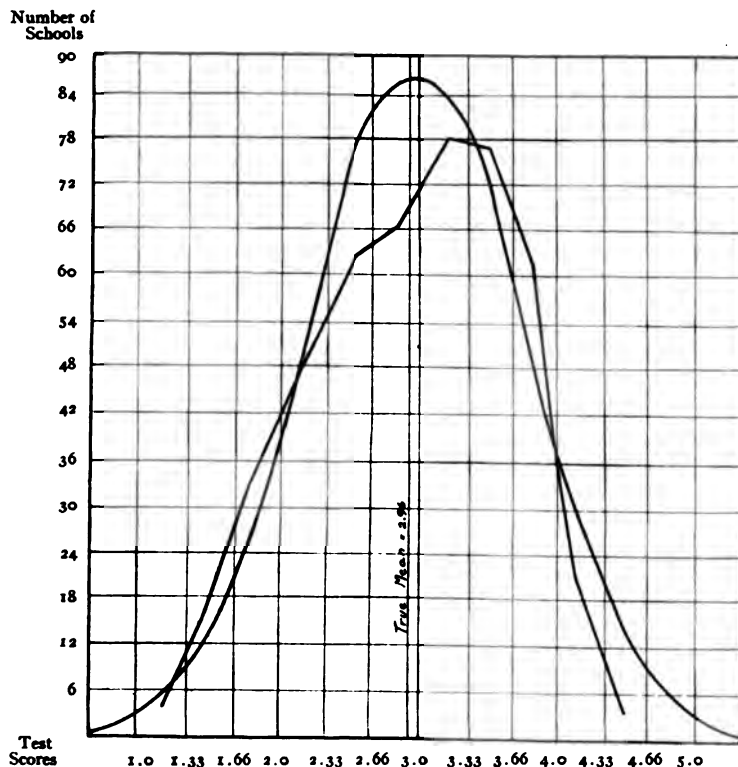


FIG. 30.—The normal probability curve superimposed upon the curve made by the distribution of the averages of the judgments on the French seams and hems.

in Figure 31, the intervals between 65 and 100, 70 and 100, and 75 and 100 were divided to correspond to the intervals on the base line of the curve plotted in terms of the scores secured by the judgments on the samples. A table giving the values in school marks for these scores is printed on the sheet with the photograph of the scale. How the translation into school marks was made is also indicated in Figure 31.

## WHAT CAN BE GAINED BY THE USE OF SUCH A SCALE?

The most important question which arises in connection with such a measuring device as the one just described is, "What effect will it have on the work of teacher and of pupil?" To state in advance just what that effect will be is impossible, but, judging by the results which have followed the use of similar devices in other fields, we may without hesitation forecast a few possibilities.

*First, it leads to the definite setting of standards of attainment.*—In the first place, such a device ought to help teachers to set up certain standards

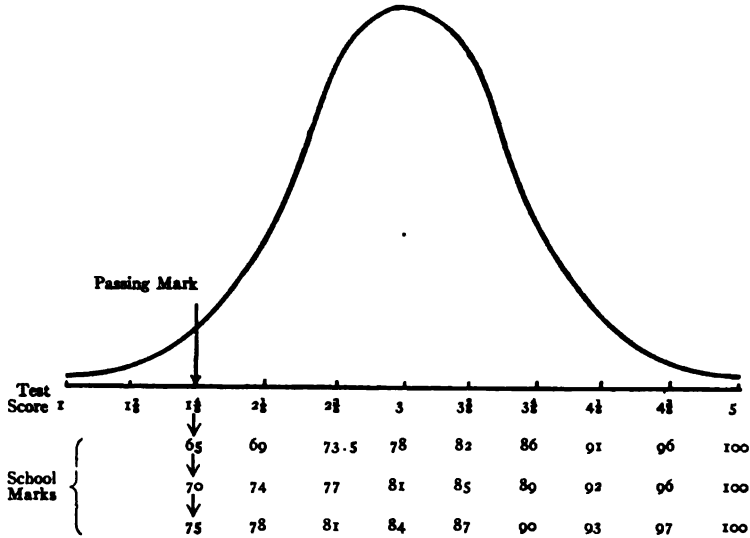


FIG. 31.—An illustration showing what school mark should be assigned to a particular sample which was given a specific score by the use of the scale when the passing mark was set at 1½ on the scoring scheme.

of achievement in technique, the common interpretation of which will not be confined to one teacher or one school, or one system, but which will mean the same thing to everyone who uses the scale. There is at present no adequate terminology. A mark of 80 or of B—, perhaps, has a fairly definite meaning to the teacher who gives it, but its interpretation by another teacher may be quite different, as each teacher's scale of values is an individual matter and exists only in her inner consciousness. It is subjective not objective. On the contrary, similar marks on a definite scale to which everyone has access will be capable of common interpretation by all parties concerned. With the

establishment of a commonly understood terminology of this sort, definite standards of achievement for the various grades can be set up. This will have to be done by the examination of many samples and by the calculating of averages and medians in order to be sure that the standards are set neither too high nor too low. After such steps have been taken it will be legitimate to require that each pupil in a given grade show at least such attainment in technique as is indicated by a certain rank on the scale. If such requirements are enforced and if teachers can know what to expect in technique at the beginning of each new grade, time and energy now wasted in repetition of effort may be more profitably expended in the development of problem-solving ability.

*Secondly, it gives the inexperienced teacher a definite guide.*—Especially to the inexperienced teacher will such a scale, when standardized, prove helpful. Often she feels quite at a loss to know what degree of excellence in technique she has a right to expect from pupils in a certain grade. If she can know that the average mark attained by pupils of that grade considered in large numbers is 65 or 75 or 85 on a standardized scale which she has in her hands, she will then have a definite guide for her judgments.

*Thirdly, it makes teachers self-critical.*—Again, the use of such a scale will have a tendency to make teachers self-critical in a healthful fashion. A common scale of this sort may be used as a measuring stick for the work of classes of various grades in all parts of the country. The results from various schools may then be compared. If a teacher discovers that her pupils are not ranking up to the general average of pupils of the same grade, it is more than likely that she will begin to wonder why and will set herself to the solution of the problem with which she is confronted. She will examine her methods, try to discover what the particular weaknesses in her teaching are, what points she is not emphasizing sufficiently, and, in short, why she does not secure better results.

On the other hand, if the work of a particular school or school system ranks especially high, will it not be to the advantage of all teachers of the subject to have someone make a study of the methods employed in that school or system so that others may profit by their experience?

*Fourthly, it makes possible comparison of schools and classes and pupils which leads to healthful emulation.*—The spirit of emulation will act also as a spur to pupils. They are always interested in comparative scores and enjoy making a creditable showing as individuals or as a class. In one school where the tests were recently given and ranked

by a tentative scoring scheme, the pupils displayed a keen interest in their own scores and in the average and the median of the class. The tests seemed to make their work assume in their eyes an importance akin to that of other school subjects in which they are frequently tested.

*Fifthly, it portrays clearly types of pupils' difficulties.*—The analytical character of the scale and its graphic form make possible its use as a corrective device in the hands of the pupils. Each difficulty which the pupil is likely to encounter is carefully pictured and explained so that she can see just what it is that makes her work poor or medium or good in quality. By constant reference to such pictures the pupil will be led to correct her own mistakes in an intelligent fashion, thus relieving the teacher from constant emphasis on technique.

## CHAPTER IX

### A PROGRAM FOR THE SCIENTIFIC STUDY OF HOME ECONOMICS EDUCATION

The situation that confronts those who are active in home economics education is very large, with opportunity for constructive development. The most important statements that have been made concerning home economics are those that refer to its unformulated condition. Construction—not reconstruction—is the keynote. The home economics course is a newcomer in the public schools. Its content and its emphasis are not routinized. There is no crust of teaching tradition to break through. There is no established sequence. Neither is there even tentative agreement that certain types of subject-matter are to be regarded as inviolate, as they are in the established classical and mathematical subjects.

Let us set about the scientific building of a new movement in home economics. To do so, an important first step is the formulation of a definite program of development. Without a program our efforts will be unco-ordinated and will not result in definite and helpful advances. Therefore, we conclude this evaluation of current practices in public-school home economics by suggestions for future work.

#### A SUGGESTED PROGRAM

The most urgent need is vigorous discussion of the present situation. In this report five pressing needs have been established. They deal with (1) the need for a real curriculum which will reveal sequence of subjects and topics and gradation of material; (2) the urgent need for a thorough change in teaching emphasis; (3) a statement of aims or objectives phrased in terms of pupils' experiences and abilities; (4) a need of testing results in teaching; and (5) the need for a complete program for curriculum-making and teaching procedure.

In the discriminating debate concerning the vital issues in the field, home economics educational associations should lead. There are national associations through the machinery of which it should be feasible to set in motion a type of investigation and discussion which will bring permanent results at an early date: the American Home Economics Association and the National Education Association. In

addition to these, such regional associations as the Central Association of Science and Mathematics Teachers and other like groups which are active in eastern, southern, and western sections of the country should co-operate—also the various university high-school conferences, such as the University of Pennsylvania "School Men's Week," the Spring Conference between the University of Chicago and Associated Secondary Schools, and the University of Illinois High-School Conference. These are illustrations of types of associations whose activities are restricted to local territory, but in which leadership of the most advanced types is already at hand.

TYPES OF PROCEDURE BY WHICH CHANGES IN THE CURRICULUM  
CAN BE BROUGHT ABOUT

Changes in the curriculum can best be brought about by:

1. Evaluating textbooks on definite criteria.
2. Summarizing intelligent judgments concerning practice in home economics.
3. Carrying on scientific studies of curriculum-making and teaching.

*New textbooks in home economics should be evaluated on the basis of definite criteria.*—Great gains will come to the teaching of our subject if we are constructively critical of each new textbook offered for use in the public schools. Each book should be weighed against the two principles of social worth and thinking value which we suggested in chapter iv for the selection of subject-matter. Is the material in textbooks socially worth while? Can it be justified from the point of view of its use in the satisfaction either of the child's needs in the home or his future adult needs? Is the subject-matter presented in the textbook organized in such a way as to lead to genuine thinking? Does the textbook emphasize training in making intelligent decisions or does it give a routine emphasis upon myriad facts?

*Sanction of teaching bodies needed.*—The second method by which changes in the curriculum can be effected is through the medium of teachers' associations rather than through committee reports. There is a very real reason for this. Committee procedure has consisted largely in the formulation of the judgments of a few individuals of the committee rather than a consensus of many expert opinions. Therefore, the only criterion against which proposed curriculum stuff has been measured has been found in their individual experiences. A new type of committee procedure is necessary. Findings, to have definite effect upon the public-school curriculum, must be thoroughly discussed by, and have the



official sanction of, organized teaching bodies. As a part of the program for development, we urge that committees of various associations carry on extensive collections of judgments of supervisors and teachers in public-school systems, writers of textbooks, specialists in bureaus, and university teachers of courses in home economics. One of our most important tasks is the summation of the most intelligent thought of home economics people on the basic issues that we have pointed out throughout this monograph.

*Scientific procedure of curriculum-making.*—Committees should delegate responsibility for research to collaborating specialists. There is ample justification for this suggestion in the results of the activities of such committees as the Committee on Minimum Essentials in Elementary School Subjects of the National Education Association. We shall do well to apply the technique of investigation which this committee has worked out. It is unique in the history of curriculum-making for the schools of any country. The central feature of the procedure is for committees of important associations to delegate to individuals the special study of individual research problems. Groups of these co-operating specialists meeting and discussing their problems in local centers should report stages of progress and findings on the programs of various home economics associations. But the essence of the technique is the delegation of individual responsibility for carrying on the research.

The movement for research is already well launched. In various educational centers, both in our university and in progressive city school systems, individuals and groups are already actively carrying on scientific study. The Committee on Educational Research of the American Home Economics Association has research under way which will be reported at the annual meetings of the Association. Committees of the Central Association of Science and Mathematics Teachers are working on special problems. The programs in home economics of the University of Chicago and Associated Secondary Schools are also contributing vigorous discussions of results of research.

#### ILLUSTRATIVE RESEARCH PROBLEMS IN HOME ECONOMICS EDUCATION

*Determination of minimum essentials.*—The most urgent problem for scientific study is the determination of socially worth-while facts and processes for the home economics curriculum. The determining of minimum essentials through the use of content or information tests and through teachers' judgments, as evidenced by the analysis of textbooks and courses of study has been discussed. The next step involves

the carrying on of various scientific studies for the purpose of determining what ought to be taught. Illustrations are given of two of such studies.

1. *Studies of home-making procedure in typical homes.*—Just as we first have canvassed the actual status of home economics education in the schools, so a survey of home-making activities in typical kinds of homes gives promise of worth-while results. To standardize the technique of such surveys the present writers have already carried on a preliminary analysis of two hundred and fifty homes. A detailed question blank was prepared on which investigators tabulated replies of individual home-makers. A sound collection of facts concerning what goes on in the home can be made only by having an investigator go to the home-makers personally, and by careful questioning secure answers to definitely formulated questions. Our own question blank, preliminary as it was, has gone through a number of stages and revisions. In spite of the care with which such question blanks are constructed, nothing but experimental filling out of such blanks with home-makers can enable one to prepare a complete scale.

From such a blank one finds out, for example, what proportion of homes of various types handle the laundry work in the home—in what proportion commercial utilities are used. A good illustration of types of facts collected is the extent to which the home makes clothing as contrasted with its use of ready-to-wear clothing. Similarly the extent to which home-makers patronize bargain sales, how frequently they use commercial patterns, make their own patterns, alter patterns, use a form in dressmaking, renovate fabrics, dye fabrics, etc. Facts have been collected concerning the extent to which labor-saving devices are used—how many use bread mixers, cake mixers, dish washers, sewing machines, vacuum cleaners, etc. It is important to note how many keep household accounts: how many really operate their homes on a budget. The attendance upon clubs, to which much consideration of home-making problems is given, should also be canvassed, and the amount and kind of reading in home-making magazines. These that we have named are illustrative of the types of facts which have been collected by personal investigations of various types of homes.

2. *Studies of the judgments of home-makers who have had previous experience in teaching home economics.*—It doubtless will be agreed that the home-maker of several years' experience who formerly has taught home economics in the public schools (and perhaps in higher institutions) will be best equipped to evaluate proposed curriculum material.

We propose as a part of the suggested program the careful canvass of the judgments of just such trained workers. An investigation of this type has already been launched by some of the present writers. Much work needs to be done by the home economics people generally over the country.

It should be clearly recognized, however, that this type of investigation will merely throw a little light on the problem of what it will be possible to do in the home through the careful training of children in the public schools. It does not answer the question definitely of what ought to be taught in the public schools.

#### STUDIES OF PLACEMENT OF SUBJECTS AND TOPICS

Related to the problem of determining minimum essentials is that of the careful consideration of arrangement of material. This fundamental problem of a graded curriculum—a sequential order of subjects and topics adapted to the developing maturity of children—can be attacked in two ways: first, by a thorough-going exchange of ideas in round-table discussions of home economics leaders; second, by the experimental teaching of proposed arrangements. Judgments should be compiled through the work of research investigators. Our report has pointed out the striking need of tentative agreement as to (1) the placement of subjects within the various grades, and (2) the most effective order of presentation and arrangement. The use of committee procedure at this point should lead to important advances.

*Tentative curriculum material permanently organized only through experimental teaching.* The formulation of tentative courses of study by judgment methods is necessary. The final arrangement of material, however, can be determined only through classroom experiments in teaching. Scientific procedure in home economics education will find its finest expression, therefore, in detailed experiments in class presentation of curriculum material which has been selected in the foregoing ways.

*Experimental teaching means the study of how children learn.*—We have previously said that the psychology of teaching home economics has not been formulated. It is apparent to students of the question that it will be developed only through intensive classroom studies of learning. One principle controls such classroom experiments: a teacher cannot teach and study learning effectively at the same time. That has been proved by years of attempts on the part of various workers. The scientific study of "learning" necessitates that at least two minds

work on the same problem at the same time: one mind, that of the teacher organizing and presenting her material in terms of the experiences of young children; the second, that of another teacher observing the former's class work critically, day after day, and later teaching the same subject-matter under the careful scrutiny of the teacher whom she observed in the previous hour. We commend to the attention of students of the scientific study of education in home economics the importance of setting up experiments of this kind. We are convinced that only by some such procedure can we write adequate school textbooks or books on the psychological processes of learning. If we are to have a psychology of home economics, it must be written by teachers of home economics who have been trained in applied psychology. There is little promise that psychologists or educational psychologists themselves will write this material for us. We must do it ourselves through our own "laboratory." That laboratory is the class in dress design, nutrition, house planning and decoration, sewing, cooking, or household administration. The bare outlines of the technique have been suggested. Experimentation and detailed discussion of them should result in the amassing of important facts concerning how children learn in home economics, through which a real applied psychology will be constructed.

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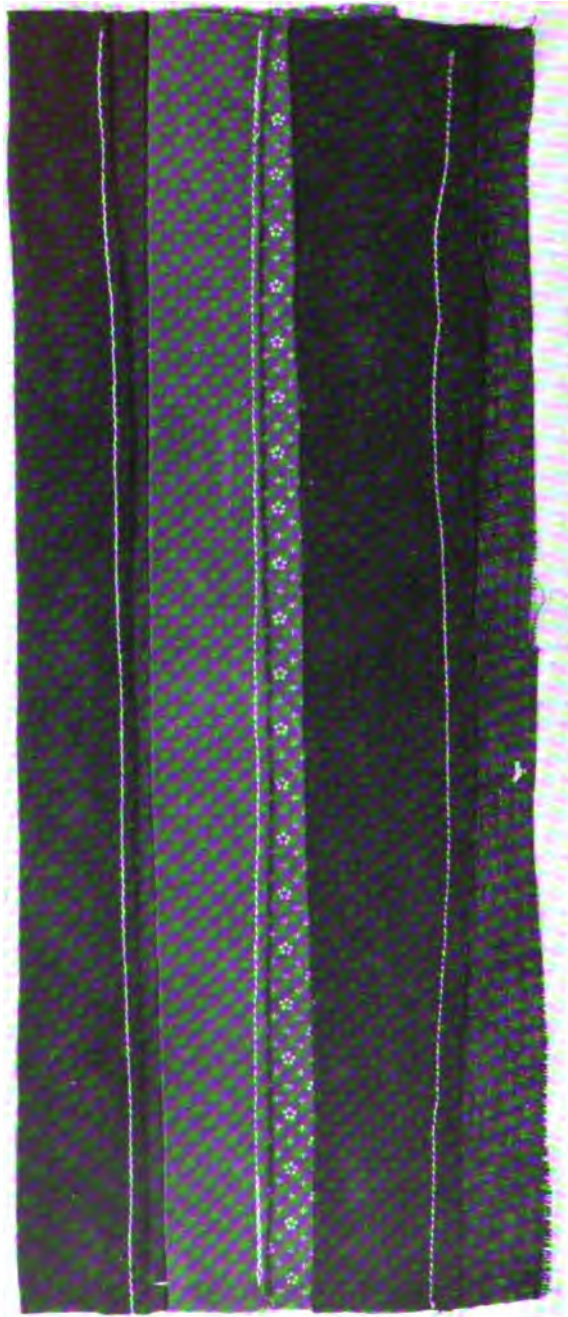
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# PLATE I



Distance and uniformity of distance between line of stitching and the edge of the hem.  
 Poor = 1. 1a, stitching slants away from edge of hem; 1b, stitching very crooked;  
 1c, stitching too far from the edge.  
 Medium = 3. Stitching follows the edge fairly well but is not quite straight.  
 Good = 5. Straight stitching following the edge.

PLATE II



1a

1b

1c

CONSTRUCTIVE ELEMENTS

Turning the hem to the proper side of the material uniformly to a specified width.

Poor=1. 1a. Hem not uniform in width; 1b. Hem turned to the right side of the material instead of to the wrong side; 1c. Hem not uniform in width and the first turn not caught in the stitching.



PLATE III



3a

3b

5

CONSTRUCTIVE ELEMENTS—*continued*

Medium=3. 3a. Width uniform but too wide; 3b. Width uniform but too narrow.  
Good=5. Uniform specified width.

PLATE IV



1a

1b

1c

3

5

NEATNESS

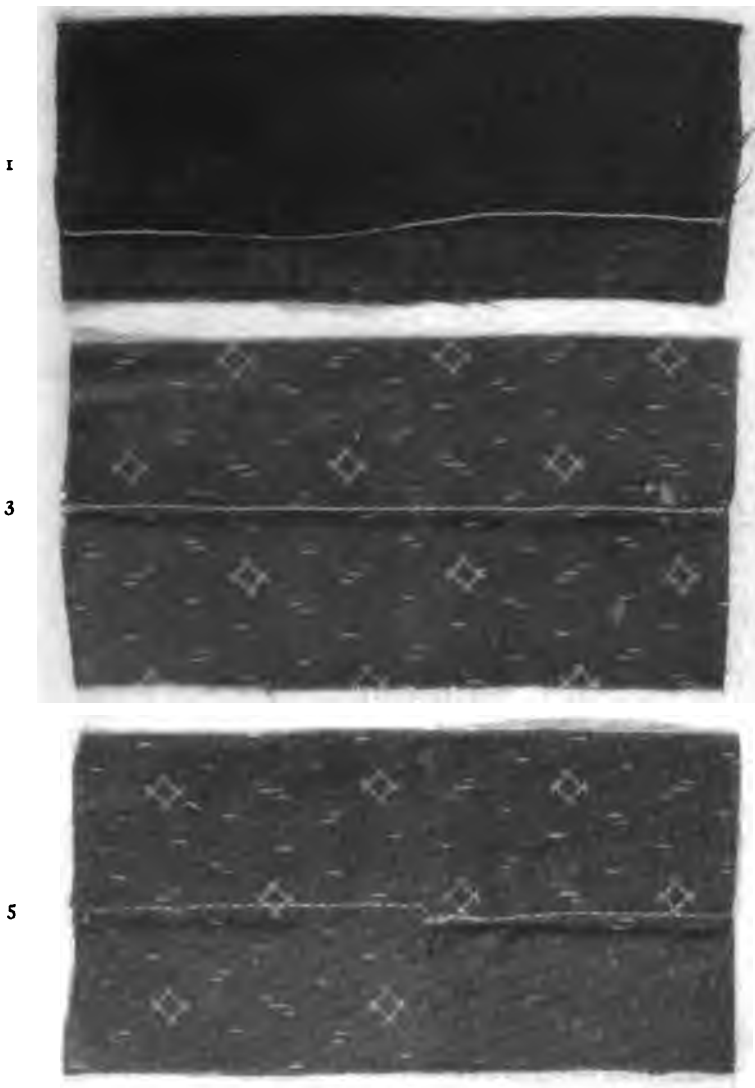
Beginning properly so that the thread is not knotted, finishing ends neatly, making only one line of stitching.

Poor=1. 1a. Retracing too far from first line of stitching; 1b. Thread knotted, two lines of stitching; 1c. Ends unfinished.

Medium=3. Retracing fails to coincide exactly with the first line of stitching.

Good=5. Retracing coincides exactly.

PLATE V



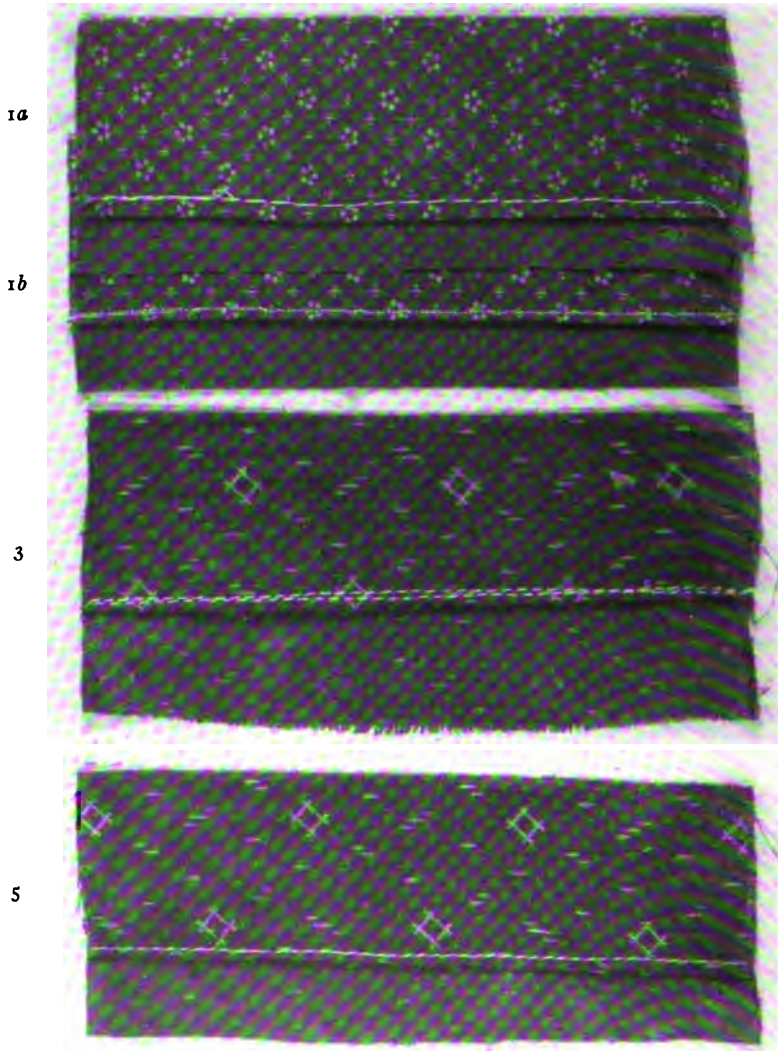
TENSION

Poor=1. One thread forms loops which stand out distinctly above the other thread.

Medium=3. Loops not so distinct as in 1, yet they allow the second thread to lie flat on the surface of the cloth instead of being drawn down into it.

Good=5. Tension so adjusted that both threads are drawn into the cloth equally, making the stitch look alike on both sides.

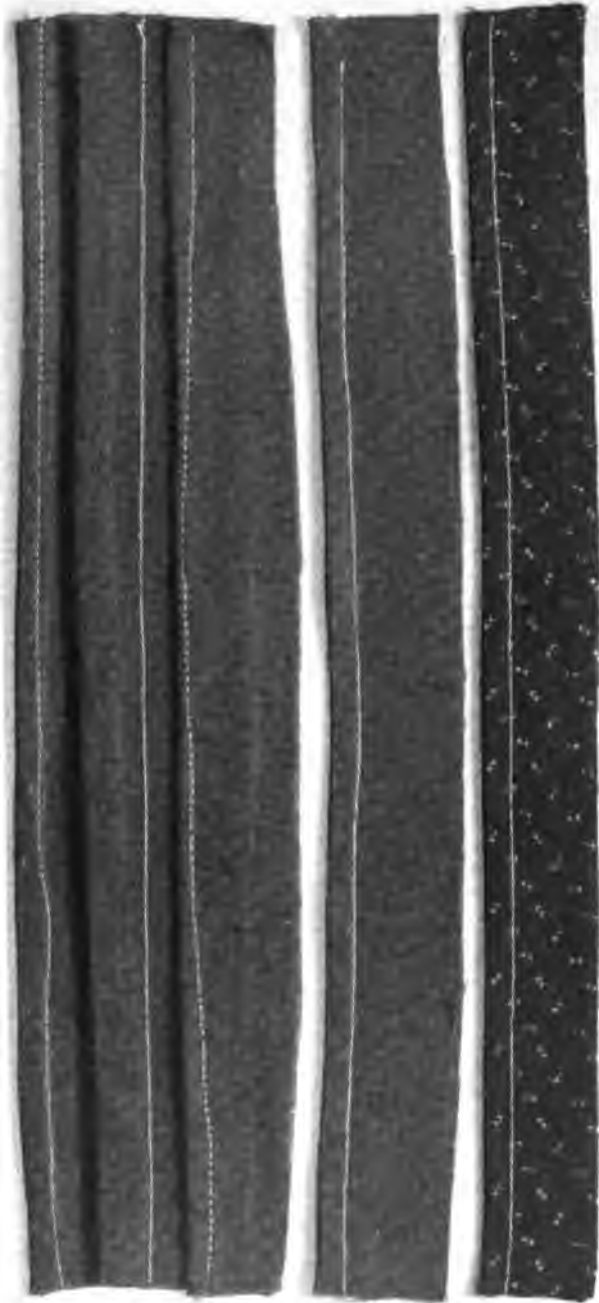
PLATE VI



LENGTH OF STITCH

Poor = 1. 1a. Too long; 1b. Too short.  
Medium = 3. Medium length.  
Good = 5. Most desirable length.

PLATE VII



1a

1b

1c

3

5

SPACING

Distance and uniformity of distance between the line of stitching and the edge of the seam.

Poor = 1. 1a. Stitching crooked; 1b. Stitching too far from the edge; 1c. Stitching too near the edge.

Medium = 3. Stitching not quite straight.

Good = 5. Width of seam correct and very nearly uniform.



# PLATE VIII



1a

1b

1c

3

5

## CONSTRUCTIVE ELEMENTS

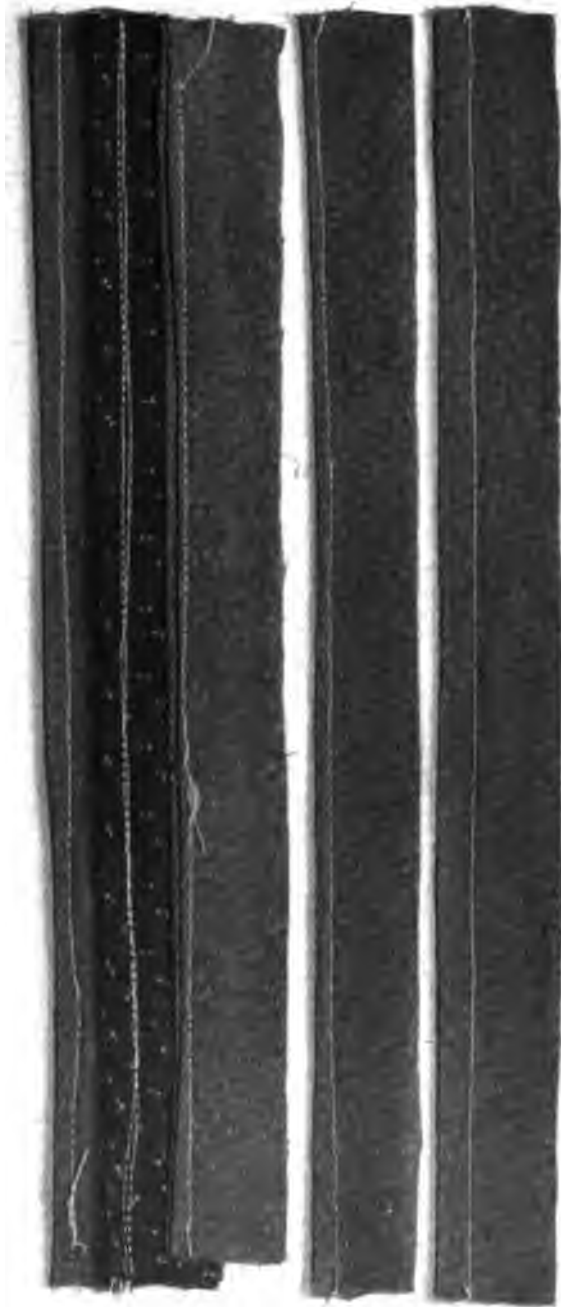
Making seam on proper side of material inclosing raw edges, turning seam directly on line of first stitching.

Poor=1. 1a. Seam not turned close to line of stitching; 1b. Raw edges not inclosed; 1c. Seam made on the right side of the material instead of on the wrong.

Medium=3. Part of the seam inaccurately turned.

Good=5. Seam on proper side of material, raw edges inclosed, edges of turn even.

PLATE IX



1a 1b 1c 3 5

NEATNESS

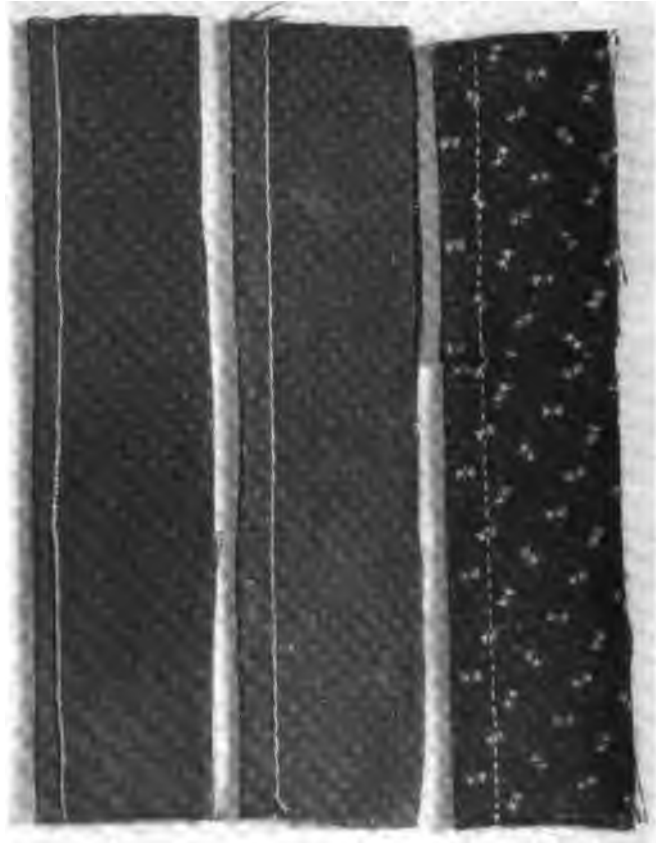
Beginning properly so that thread is not knotted, finishing ends neatly, making only one line of stitching.

Poor=1. 1a. Thread knotted; 1b. Two lines of stitching; 1c. Thread knotted, ends unfinished.

Medium=3. Slight imperfection in stitch, one end unfinished.

Good=5. Both ends properly finished, no knots.

PLATE X



1

3

5

TENSION

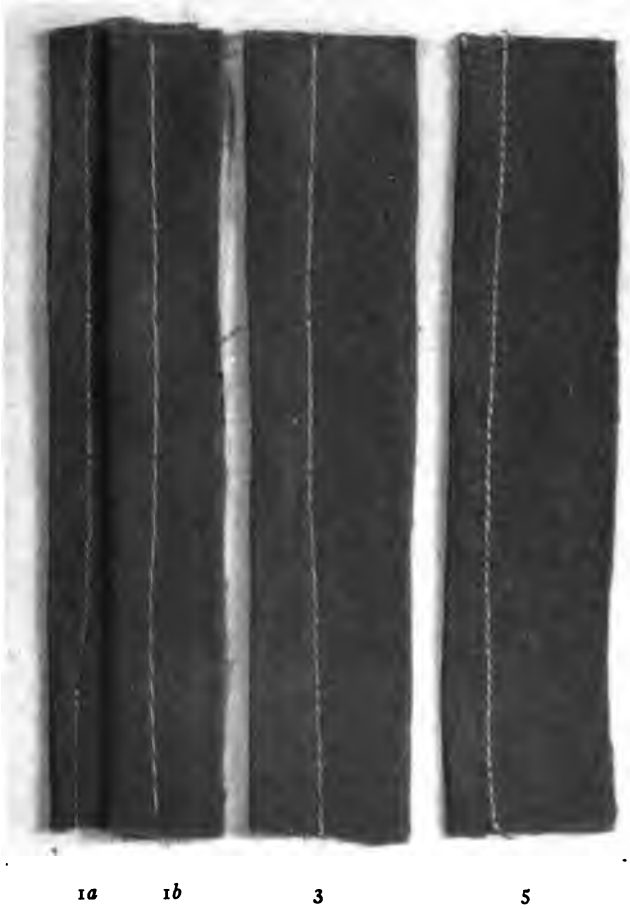
Poor=1. One thread forms loops that stand out distinctly above the other thread.

Medium=3. Loops not so distinct as in 1, yet they allow the second thread to lie flat on the surface of the cloth instead of being drawn down into it.

Good=5. Tension so adjusted that both threads are drawn into the cloth equally, making the stitch look alike on both sides.



PLATE XI



1a      1b      3      5

LENGTH OF STITCH

Poor=1. 1a. Too short; 1b. Too long.  
Medium=3. Medium length.  
Good=5. Most desirable length.



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Edited in conjunction with *The School Review* and  
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